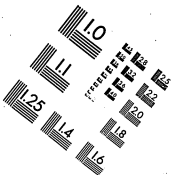
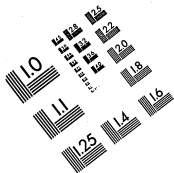


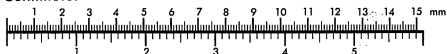


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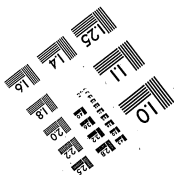
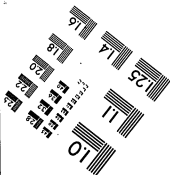
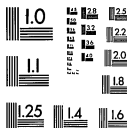
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Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION

PART II (1879-1886)

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THOMAS A. EDISON PAPERS
A SELECTIVE MICROFILM EDITION
PART II
(1879-1886)

REEL 90

SPECIAL COLLECTIONS SERIES (SPC-1)

Edison Diary

Charles Batchelor Collection
Journals
Notebooks

SPECIAL COLLECTIONS SERIES, 1879-1886

There are a variety of special collections in the archives of the Edison National Historic Site. They range from single items that do not fit into the main record groups to extensive collections that were donated to, or purchased by, the ENHS. Four such collections contain documents for the period 1879-1886: 1) Thomas A. Edison Diary; 2) Charles Batchelor Collection; 3) Francis R. Upton Collection; 4) John Kruesi Collection.

1) Thomas A. Edison Diary (1885). This is the only known volume kept by Edison to record thoughts and feelings of a personal nature.

2) Charles Batchelor Collection (1871-1912). This collection contains the personal, laboratory, and business records of Edison's principal assistant, Charles Batchelor (1845-1910). Batchelor's papers were donated to the Edison National Historic Site over the period 1957-1961 by his daughter, Emma Batchelor. Also included in the donation are letters and other documents relating to various members of Batchelor's family, including his wife, Rosanna, and his daughter, Emma.

3) Francis R. Upton Collection (1878-1918). This collection contains the personal, laboratory, and business records of Francis Robbins Upton (1845-1921). Upton came to Menlo Park in late 1878 after studying physics at Princeton and in Berlin. He played a major role in the development of Edison's incandescent lighting system. Upton's papers were donated to the Edison National Historic Site in 1963 by Paul Kruesi, the son of Edison's longtime associate John Kruesi. Kruesi had received the papers from Upton's daughter, Eleanor.

4) John Kruesi Collection (1883-1891) [not filmed]. This collection contains photocopies of twelve letters relating to the career of John Kruesi (1843-1899), foreman of Edison's Menlo Park laboratory machine shop and later general manager of the Edison Machine Works in Schenectady. Included among the correspondence are several letters by Edison. The documents relate to electric lighting and to the operations of the Edison Machine Works. These photocopies were donated to the Edison National Historic Site in 1962 by Kruesi's son, Paul. Also included in the donation are photocopies of clippings from the period 1919-1962. The clippings pertain to both Kruesi and Edison.

Although the documents in these collections span the various chronological segments of the Thomas A. Edison Papers Microfilm Edition, the majority of documents date from the period 1878-1886. In order to preserve the integrity of the collections, all of the items selected for inclusion have been filmed in this segment of the edition.

THOMAS A. EDISON DIARY, Cat. 117

This diary, which covers the period July 12, 1885-July 21, 1885, is the only known volume kept by Edison specifically to record thoughts and feelings of a personal nature. Included are observations by Edison on art, literature, and religion, along with comments about his dreams, his health, and his feelings toward his future wife, Mina Miller, and toward his daughter, Marion. Other entries discuss Edison's visits to Woodside Villa, the home of Ezra T. Gilliland near Winthrop, Massachusetts. The pages are unnumbered. Only 44 pages have been used.

CAT. # 117

Mr. Thomas A. Edison
"Horseshoe Villa"
July 14 '83.

Menlo Park N.J.

Sunday July 12 1885-

Awakened at 5.15 AM. my eyes were embarrassed by the sunbeams - turned my back to them and tried to take another dip into oblivion - succeeded - awakened at 7 AM. thought of Mina, Daisy and Mamma G - put all 3 in my mental kaleidoscope to obtain a new combination a la Galton. took Mina as a basis, tried to improve her beauty by discarding and adding certain features borrowed from Daisy and Mamma G. a sort of Raphaelized beauty, got into it too deep, mind flew away and I went to sleep again. Awakened at 8.15 AM.

Poweful itching of my head, lots of white dry dandruff - what is this damnable material, Perhaps its the dust from the dry literary matter I've crowded into my noddle lately. Its nomadic, gets all over my coat, must read about it in the Encyclopedia. Smoking too much makes me nervous - must lessen my natural tendency to acquire such habits - holding heavy cigar constantly in my mouth has deformed my upper lip, it has a sort of Navanna curl. Arose at 9 o'clock came down stairs expecting twas too late for breakfast - twasnt. couldnt eat much, nerves of stomach too nicotiney. The roots of tobacco plants must go clear through to hell. Satans principal agent. Dyspepsia

must have charge of this branch of the vegetable kingdom.

— It has just occurred to me that the brain may digest certain portions of food, say the ethereal part, as well as the stomach — perhaps dandruff is the excreta of the mind — the quantity of this material being directly proportional to the amount of reading one indulges in. A book on German metaphysics would thus easily ruin a dress suit. After breakfast start reading Hawthorne's English Note Book don't think much of it — perhaps I'm a literary barbarian and am not yet educated up to the point of appreciating fine writing — 90 per cent of his book is descriptive of old churches and graveyards and coroners — He and Geo Selwyn ought to have been appointed perpetual coroners of London.

Two fine things in the book were these.

Hawthorne shewing to little Rose Hawthorne a big live lobster told her it was a very ugly thing and would bite everybody, whereupon she asked "if the first one God made, bit him" — again "Ghostland is beyond the jurisdiction of veracity"

— I think freckles on the skin are due to some salt of Iron, sunlight brings them out by reducing them from high to low state of oxidation — perhaps with a powerful magnet applied for some time, and then with proper chemicals, these mud holes of beauty might be removed. Dot is

very¹ is very busy cleaning the abode of our deaf and dumb parrot—she has fed it tons of edibles, and never got a sound out of it. This bird has the taciturnity of a statue, and the dirt producing capacity of a drove of buffalo.

This is by far the nicest day of this season, neither too hot or too cold.— it blooms on the apex of perfection — an Edonday
Good day for an angels pic nic, They could lunch on the smell of flowers and new mown hay, drink the moisture of the air, and dance to the hum of bees, Fancy the soul of Plato astride of a butterfly riding around Menlo Park with a lunch basket

Nature is bound to smile somehow, Holzer has a little dog which just came on the veranda. The face of this dog was a diabol as a bust of Dante, but the dog wagged its tail continuously— This is evidently the way a dog laughs — I wonder if dogs ever go up to flowers and smell them — I think not— flowers were never intended for dogs, and perhaps only incidentally for man, evidently Darwin has it right They make themselves pretty to attract the insect world who are the transportation agents of their pollen, pollen freight via B^{ee} line.

There is a bumblebees nest somewhere, near this veranda, several times one came near me — some little information (acquired experimentally) I obtained when a

small boy causes me to lose all delight in watching the navigation of this armed flower burglar.

Had dinner at 3 P.M. ruins of a chicken, rice pudding - I eat too quick - at 4 o'clock Dot came around with her horse "Colonel" and took me out riding - beautiful roads - saw 10 acre lot full cultivated red raspberries. "A burying ground" so to speak - got this execrable pun off on Dot. Dot says she is going to write a novel, already started on - she has the judgement of a girl of 16 although only 12.

We passed through the town of Metuchen, this town was named after an Indian chief, they called him Metuchen the chief of the rolling lands, the country being undulating. Dot laughed heartily when I told her about a church being a heavenly fire-escape.

Returned from drive at 5 P.M. commenced read short sketches of life: Macaulay, Sidney Smith, Dickens, & Charlotte Bronte, Macaulay when only 4 years ago omnivorous reader, used book language in his childish conversation, when 5 years old, lady spilled some hot coffee on his leg. after awhile she asked him if he was better - he replied - "Madam the agony has abated." Macaulay's mother must have built his mind several years before his body. Sidney Smith's flashes of wit as perfect to call them chestnuts would be literary blasphemy.

They are wandering jewels to wander forever in the
printers' world - Don't like Dickens - don't know why - I'll

stock my literary cellar with his works later.

Charlotte Brontë was like DeQuincy. what a nice married
couple they would have been, I must read Jane Eyre.

— played a little on the piano - its badly out of tune - two
keys have lost their voice,

Dot just read to me outlines of her proposed novel, the
basis seems to be a marriage under duress - I told her
that in case of a marriage to put in bucketfuls of
misery. This would make it realistic, speaking of
realism in painting etc. Steele Mackaye at a dinner
given to H. H. Porter, Wm Winter and myself told us of a
definition of modern realism given by some Frenchman
whose name I have forgotten. "Realism, a dirty
long haired painter sitting on the head of a bust of
Shakespeare painting a pair of old boots covered
with dung." The bell rings for supper. I go.

Sardines the principal attraction - on seeing them was
attacked by a stroke of vivid memory of some sardines I
eat last winter that caused a rebellion in the labyrinth
of my stomach - could scarcely swallow them today

they nearly did the "return ball" act. After supper Dot pitched a ball to me several dozen times - first I ever tried to catch. It was as hard as Nero's heart - nearly broke my baby-finger - gave it up - learned Dot and Maggie how to play "Duck on the rock" They both thought it great fun, and this is Sunday - My conscience seems to be oblivious of Sunday - it must be incrustated with a sort of irreligious tartar. If I was not so deaf I might go to church and get it taken off or at least loosened - eccavi I will read the new version of the Bible

Holzer is going to use the old laboratory for the purpose of hatching chickens artificially by an electric incubator. He is very enthusiastic - gave me full details - he is a very patient and careful experimenter - think he will succeed - everything succeeded in that old laboratory - Just think electricity employed to cheat a poor hen out of the pleasures of maternity - Machine born chickens - What is home without a mother

I suggested to H that he vaccinate his hens with chicken pox virus, then the eggs would have their embryo hereditarily innoculated & none of the chickens would have the disease. for economy's sake he could start with one hen and rooster. He being

a scientific man with no farm experience I explained the necessity of having a rooster, he saw the force of this suggestion at once, The sun has left us on time, am going to read from the encyclopædia Britannica to steady my nerves and go to bed early. I will shut my eyes and imagine a terraced abyss, each ^{terrace} occupied by a beautiful maiden to the first I will deliver my mind and they will pass it down down to the uttermost depths of silence and oblivion - Went to bed worked my imagination for a supply of maidens, only saw Miss Daisy Mamma Schemo busted-sleep.

Woodside Villa
Boston Harbor

Menlo Park N.J. July 13 1885

Woke (is there such a word) at 6 o'clock - slipped down the declivity of unconsciousness again until 7. arose and tried to shave with a razor so dull, that everytime I scraped my face it looked as if I was in the throes of cholera morbus. By shaving often I too a certain extent circumvent the diabolical malignity of these razors - If I could get my mind down to details perhaps could learn to sharpen it, but on the otherhand I might eat myself - As I had to catch the 7.30 am train for New York. I hurried breakfast, crowded meat potatoes, eggs, coffee, tandem down into the chemical room of my body. I've now got dyspepsia in that diabolical thing that Carlyle calls the stomach, rushed and caught train - Bought a New York World at Elizabeth for my mental breakfast - Among the million of perfected mortals on Manhattan island two of them took it into their heads to cut their naval chord from mother earth and be born into a new world, while two other less developed citizens stopped two of the neighbors from living - The details of these two little

incidents conveyed to my mind what beautiful creatures we ~~live~~ live among, and how with the aid of the police, civilization so rapidly advances — Went to New York via Desbrosses Street ferry — took cars across town — saw a woman get into car that was so tall and frightfully thin as well as dried up that my mechanical mind at once conceived the idea that it would be the proper thing to run a lancet into her arm and kneel joints and insert automatic self feeding oil cups to diminish the creaking when she walked — Got off at Broadway — tried experiment of walking two miles to our office 65 5th Ave with idea it would alleviate my dyspeptic pains — It didn't — Went into Scribner's Sons on way up saw about a thousand books I wanted right off Mind No 1 said why not buy a box full and send to Boston now — Mind No 2 (acquired and worldly mind) gave a most withering mental glance at mind No 1 and said You fool, buy only two books, these you can carry without trouble and will last until you get to Boston, Buying books in New York to send to Boston is like "carrying coals to Newcastle" of course I took the advice of this

Earthy adviser — Bought Aldrich's Story of a bad boy which is a spongecake kind of literature, very witty and charming — and a work on Goethe & Schiller by Boyesen which is soggy literature. a little wit & anecdote in this style of literature would have the same effect as baking soda on bread, give pleasing results. —

Waited one hour for the appearance of a lawyer who is to cross-examine me on events that occurred 11 years ago — went on stand at 1130 — He handed me a piece of paper with some figures on it, not another mark, asked in a childlike voice if these were my figures, what they were about and what day 11 years ago I made them — This implied compliment to the splendor of my memory was at first so pleasing to my vanity that I tried every means to trap my memory into stating just what he wanted — but then I thought what good is a compliment from a 10 cent lawyer, and I waived back my recollection.

A lawsuit is the suicide of Time. — Got through at 330 PM — waded through a lot of accumulated correspondence mostly relating to other peoples business — Insull saw Winan about getting car

for Railroad Trough experiment - will get costs in day
or so. — Tomlinson made Sammy mad by saying
he Insull was Valet to my intellect = got \$100
met Dot and skipped for the Argosy of the
Puritan Sea; (10) Sound Sleamboat, — Dot is reading
a novel - rather trashy, Love hash. — I completed
reading Aldrich's Bad Boy and advanced 50 pages
in Goethe then retired to a "Sound" sleep

Woodside Villa July 14 1885.

Dot introduced me to a new day at 5.30 am.
Arose - toileted quickly - breakfasted - then went from
boat to street car - asked colored gentleman, how
long before car left - worked his articulating
apparatus so weakly I didn't hear word he said.
- its nice to be a little deaf when travelling
you can ask everybody directions then pump
your imagination for the answer, it strengthens
this faculty. - Took train leaving at 7 from
Providence for the metropolis of culture - arrived
there 9 AM "Coupaud" it to Damono office
- waited $\frac{3}{4}$ hour for his arrival. Then left for the
Chateau-sur-le-Mer - If I stay there much
longer Mrs. L. - will think me a bore - perhaps
she thinks I make only two visits each year in
one place each of 6 months - Noticed there
was no stewardess on the ferry boat, strange
omission considering the length of the voyage
and the swell made by the tri-monthly boat to
Nantasket. - Man with a dusty railroad Co
Expression let down a sort of portcullis

and the passengers poured themselves out - Arrived
Winthrop Junction found Patrick there according to
telephonic instructions, another evidence that the
telephone works sometimes, Patrick had the Americanized
Dog cart and incidentally a horse, suppose Patrick
would forget the horse, because last week he went
into Boston to Darners city residence and turned
on the gas & started up the meter from a state
of innocence to the wildest perversion, ^{+ forgot to turn gas off} - Arrived
at Woodside Villa and was greeted by Mamma
with a smile as sweet as a cherub that buzzed
around the bedside of Raphael - A fresh
invoice of innocence and beauty had arrived in
my absence in the persons of Miss Louise Igoe and
her aunt Miss Igoe like Miss Daisy is from
Indianapolis, that producer of hoosier venus's
Miss Igoe is a pronounced blonde, blue eyes, with
a complexion as clear as the conscience of a
baby angel, with hair like Andromache
Miss Igoe's aunt is a bright elderly lady who
beat me so bad at checkers that my bump of
"Strategic combination" has sunk in about two

inches — for fear that Mrs. G. — might think I had
an inexhaustible supply of dirty shirts, I put on one
of those starched horrors procured for me by Tomlinson
— put my spongy mind at work on life Götter —
Chewed some Tulu gum presented me by Mrs. G. —
Conceived the idea that the mastication of this chunk
of illimitable plasticity — a dentiferous tread-mill
so to speak, would act on the salivary glands to
produce an excess of this necessary ingredient
of the digestive fluid and thus a self-acting home
made remedy for dyspepsia could be obtained
— believe there is something in this as my dyspeptic
pains are receding from ~~from~~ recognition
— Dot is learning to play Lange's "Blumenlied"
on the piano — Miss Goe I learn from a
desultory conversation is involved in a correspondence
with a brother of Miss Mina who resides at Canton
Ohio being connected with the Mower & reaper
firm of Auttman & Miller The letter received today
being about as long as the girls at the Grand
Hotel at Paris are I surmise of rather a
serious character, cupid-ly speaking

The frequency of their reception will confirm or disaffirm my conjectures as to the proximity of a serious catastrophe — A postoffice courtship is a novelty to me, so I have resolved to follow up this matter for the experience which I will obtain — This may come handy should

"My head ever become the dupe of my heart"
as papa Rochefoucauld puts it. — In evening went out on sea wall — noticed a strange phosphorescent light in the west, probably caused by a baby moon just going down Chinaward thought at first the Aurora Borealis had moved out west — Went to bed early dreamed of a ~~skatman~~ Demon with eyes four hundred feet apart.

Woodside Villa July 15 1885-

Slept well - Breakfasted clear up to my Adams apple - took shawl strap and went to Boston with Damon with following memorandum of things to get.

Avatar on the human face - Miss Cleveland's book - Heloise by Rousseau - short neckties - Wilhelm Meister - Basket fruit - Sorrows of Werther - Madam Recamiers works - Diary books - pencils Telephone documents Mark Twains gummed Potentially of literature (ie) scrap book. - also book called "How success is won" containing life of Dr Vincent & something in about Minas father and your humble servitor.

Found that only copy of Avatar which I saw the other day had been sold to some one who was on the same lay as myself Bought Disraeli's Curiousities of literature instead - Got Miss C's book - Twains scrap book - Diary books, How Success is won also fruit among which are some peaches which the vendor said came from California - think

of a lie 3000 miles long - There seemed to be a South Carolina accent in their taste - Started back to office with fruit, apparently by the same route I came, brought up in a strange street saw landmark and got on right course again. Boston ought to be buoyed and charts furnished strangers - Damon suggests American District Messenger buoys with uniform - Saw a lady who looked like Mina - got thinking about Mina and came near being run over by a street car - If Mina interferes much more will have to take out an accident policy - Went to dinner at a sort of No-bread-with-one-fishball restaurant then came up towards Damons office, met Damon Madden and Ex Gov Howard of Rhode Island, The Governor whom I know and who is very deaf greeted me with a boiler yard voice, He has to raise his voice so he can hear himself to enable him to check off the accuracy of his pronunciation. The Governor never has much time, always in a hurry - full of business, inebriated with industry - If he should be on his death bed I believe he would

call in a shorthand clerk to dictate directions for his funeral, short sketch of his life, taking a press copy of the same in case of litigation. Madden looks well in the face but I am told its an Undertakers blush - Went to Damons office he was telling me about a man who had a genius for stupidity when Vail came in dressed like Beau Brummel, both went into another room to try some experiments on Damons Phonometer - Saw Hovey a very very bright newspaper man told me a story related to him by a man who I never would have imagined could or would have told such stories. I refer to a gentleman in the employment of the Telephone Co who Tomlinson nicknamed "Prepositum" because he got off that word in a business conversation, his eminent respectability so impressed Tomlinson that when he came out of his office asked me to take him quickly somewhere discrepitable so he could recover. This story would have embarassed Satan - I shall not relate it but I have called it "Prepositums Turkish Compromise" Hovey told me a lot about a 6th sense, mind reading etc

made some suggestions about Railroad Telegraph
— Came home with Damon at 5 o'clock — Damon
has an ulcerated molar — Just before supper
Mrs Roberts and another lady came in to visit Mrs G.
Mrs R is a charming woman — Condensed ~~sun~~
sunshine — Beautiful — plays piano like a long
haired professor — played several of Lange's pieces
first time seeing them, This seems so incomprehensible
to me as a man reciting the Lord's prayer in four
languages simultaneously — Mrs R promised to come
tomorrow evening and bring with her a lady who
sings beautifully and a boy dripping with music
— Everyone after supper started their Dixiey Mrs G
Lgoe — Daisy + Dot went to bed at 1130.
forgot two nights running to ask Damon for night
shirt — That part of my memory which has charge
of the night shirt department is evidently out of
order.

Woodside Villa July 16 1885

I find on waking up this morning that I went to bed last night with the curtains up in my room - Glad the family next door retire early - I blushed retroactively to think of it - Slept well - weather clear - warm. Thermometer prolongately progressive - day so fine that barometer anaesthized - breakfasted - Diaried at lot of nonsense - Read some of Longfellow's Hyperion, read to where he tells about a statue of a saint that was attacked with somnambulism and went around nights with a lantern repairing roofs, especially that of a widow woman who neglected her family to pray all day in the church. Read account of two murders in Morning Herald to keep up my interest in human affairs - Built an air castle or two - Took my new shoes out on a trial trip - Read some of Miss Cleveland's book where she goes for George Eliot for not having as heavenly ~~even~~ streak of imaginative twaddle in her poetry - The girls assisted by myself trimmed the Elizabeth collars on twelve daisies; inked eyes nose & mouth on the yellow part which gave them a quaint human look, paper dresses were put on them

and all were mounted on the side of a paper box and labelled "The Twelve Daughters of Venus" I hope no College bred dude will come down here and throw out iminations that Venus was never married, and never had any children anyway - Girls went in bathing. Me and Damon went out in the steam yacht sailed around over the lobster nursery for an hour or so - In the evening Damon started a diary - Very witty - Miss Igoe told Damon she couldnt express her admiration, whereupon he told her to send it by ~~express~~ freight. Lunched our souls on a Strauss waltz played by Miss Daisy, then we all set around the table to write up our diaries, I learned the girls how to make shadow pictures by use of crumpled paper - we tried some experiments in mind reading which were not very successful, think mind reading contrary to common sense, wise provision of the Bon Dieu that we cannot read each others minds would stop civilization and everybody would take to the woods in fifty or hundred thousand centuries when mankind have become perfect by evolution then perhaps this sense could be developed with safety to the state, Damon

and I went into a minute expense account of our proposed earthly paradise in the land of flowers, also a duplicate north and we concluded to take short views of life and go ahead with the scheme. It will make a savage onslaught on our bank account. Damon remarked that now all the wind work is done there only remains some little details to attend to such a "raising the money" etc. Mrs Roberts hurt her soprano arm and could not come over an play for us as promised and thus we lost her perfumed conversation lovely music and serene smile - la femme qui-rit - Since Miss Igge has been reading Miss Cleverlands book her language has become ^{disyllabic} ~~disyllabic~~ and ponderous, stiff and formal, each observation seems laundried -

If this weather gets much hotter, Hell will get up a reputation as a ~~week~~ summer resort. Not asked how books went in the mail, Damon said as second class ~~maile~~ mail matter, I said me and Damon would go at this rating - suggested that Mina would have to pay full postage, Damon thought she should be registered - This reminds me that I read the other day of a man who applied for a situation as sexton in the Dead letter office - ~~Occasional~~ sisters

and I went into a minute expense account of our proposed earthly paradise in the land of Flowers, also a duplicate north and we concluded to take short views of life and go ahead with the scheme. It will make a savage onslaught on our bank account. Damon remarked that now all the wind work is done there only remains some little details to attend to such a "raising the money" etc. Mrs Roberts hurt her soprano arm and could not come over as planned for us as promised and thus we lost her perfumed conversation lovely music and serene smile - la femme qui-rit - Since Miss Igoe has been reading Miss Cleverlands book her language has become ^{disyllabic} ~~disyllabic~~ ponderous, stiff and formal, each observation seems laundried -

If this weather gets much hotter, Nell will get up a reputation as a ~~cool~~ summer resort. Not asked how books went in the mail, Damon said as second class malle mail matter, I said Me and Damon would go at this rating - suggested that Mina would have to pay full postage, Damon thought she should be registered - This reminds me that I read the other day of a man who applied for a situation as sexton in the Dead Letter Office - Daisies sisters

photograph rests on the mantel, shews very beautiful
girl every fly that has attempted to light on it
has slipped and fallen, going to put piece chalk near
it so they can chalk their feet, this will permit with
safety the insectivorous branch of nature to gaze upon
a picture of what they will attained after ages of
evolution. Ladies went to bed, this removed the
artientating upholstery, then we went to bed,

Woodside Villa July 17 1888-

Slept so sound that even Mina didn't bother me^{as} It would stagger the mind of Raphael in a dream to imagine a being comparable to the Maid of Chatagwa so I must have slept very sound - As usual I was the last one up, this is because I'm so deaf - found everybody smiling and happy - Read more of Miss Cleverlands Book, think she is a smart woman - relatively - Damons diary progressing finely - Patrick's went to city get tickets for Opera at Polly, we can compare with Sullivan's - We are going out with the ladies in yacht to sail perchance to fish, The lines will be gated at both ends, Constantly talking about Mina who me an Damon use as a sort of yardstick for measuring perfection makes Dot jealous, she threatens to become an incipient Lucretia Borgia, Hottest day of season - ~~Mud~~ Hill must have sprung a leak, at two oclock went out on yacht - cooler on the water, sailed out to the Rock-buoy. This is the point where Damon goes to change his mind, he circles

the boat around several times, like a carrier pigeon before starting out on a journey, then we start right - dropped anchor in a shady part of the open bay - I acted as Master of the fish lines, delivered them bated to all. The clam Coquets were thrown to the picatorial actors - Miss Daisy caught the first he came up smilingly to seize the Coquet when she jerked him into the dress circle, genus unknown - I caught the next - genus uncertain, The next was not caught. Fish seem to be rather conservative around this bay, one seldom catches enough to form the fundamental basis for a lie - Dante left out one of the torments of hades - I could imagine a doomed mortal made to untangle wet fish lines forever - Everybody lost patience at the stupidity of the fish in not coming forward promptly to be murdered - We hauled up anchor, and Damon steering by the compass, (he being by it) made for the vicinity of Apple island - While approaching it we saw a race between two little model vessels full rigged and about 2 feet long - Two yawl boats filled apparently with US naval officers and men

were following them, Are these effeminate pursuits a precursor of the decline and fall of a country as history tells us. - Landed at clock 4³⁰. Came into Villa and commenced reading Avatar on Facial Philosophy - Dot saw a jelly fish and vehemently called our attention to this translucent chestnut, - Barge called to take us to theatre via Winthrop Junction and Railroad. when we arrived at junction found we should have to wait some time, so we took an open street car for City - while passing along saw man on Bicycle, asked Damon if he ever rode one. He said he did, once practiced riding in large freight shed where floor was even with door of cars and three feet from ground, one day from reason he never could explain he went right through one of the doors to the ground, I remarked that I supposed he kept right on riding. No said Damon I jumped back? Arriving at Ferry Boat I asked Damon if it was further across River high^{at} said he thought it was a he noticed the pipes in the ship were at a slight angle - Arriving on the other side took Street Gondola, arrived near top of Hanan Street when horses were unable to pull cars to the

Woodbridge Villa July 18 1883

top of the hill, car slipped back, the executive department of my body was about to issue a writ of ejectment when some of the passengers jumped out and stopped Car; one passenger halloed out to let her go they would get more ride - Arriving a little too early for theatre, went to an Ice cream bazar frigidified ourselves, Then went to theatre, where we found it very hot, Solomon the Composer came from the cellar of fairies and sprung a chestnut overture on the few mortals in the audience chamber, Then the Curtain arose showing the usual number of servant girls in lights. - The raising of the panapoly of fairyland let some more heat in - a rushing sound was heard and Daman said they were turning on the steam ~~was~~ - The fairies mopped their foreheads - perspiration dripped down on stage from the painted cherubs over the arch - after numerous military evolutions by the chorus Miss Ethel Russell made her appearance - Beautiful woman, sweet voice, Wore a fur lined cloak which I thought about as appropriate in this weather as to clothe the

firemen on the Red Sea Steamers in sealokui
overcoats - noticed one or two original strains
the balance of the music seemed to be Bagpipean
Improvisations - Didn't hear anything that
was spoken except once when I thought I heard
one of the actors say that his mother ~~sang~~
sung in the Chinese ballet - Our seats
were in the Galleyhead section, After theatre
walked to ferry boat - Saw a steamer passing
brilliantly lighted Mrs's asked what could be
nicer than a lighted steamer on the waters at
night - somebody suggested two steamers -
arrived at sister ferry, took RR train, saw Miss
Russell with her last husband Mr Solomon get on
train, they stop I believe at the sea shore near us.
- Home - Bed - Sleep -

Woodside July 18 1885-

last night room was very close, single sheet over me seemed inch thick— Bug proof windows seems to repel obtrusiveness on the part of any prowling Zephyr that might want to come in and lunch on perspiration, Rolled like a ship in a typhoon, if this weather keeps on I'll wear holes in the bed clothes, Arose early Weather blasphemingly hot— went out in sun, came back dripping with water, tried to get into the umbrella rack to drain off, took off two courses of clothes This would be good day to adopt Sidney Smith's plan of taking off your flesh and sitting down in your bones. Mem— Go to a print cloth mill and have yourself run through the Calico printing machine, This would be the Ultima Thule of thin clothing, Read some in Avatar, ~~Mr~~ Recamier, Rousseau, Emile, Laid down on sofa—fell asleep—Dreamed that Damon had the sunstroke and was laid on the floor of his office. where he swelled up so that he broke the floor above and two Editors of a baseball journal fell through and were killed, Thought the chief of the

fire department came in and ordered holes to be bored in him. Then something changed the dream saw a lot of animals which such marvellous characteristics as would be sufficient to bust up the whole science of paleontology - Cuvier, Buffon & Darwin never could have started their theories had a few samples of these animals ever browsed around this little mud ball of ours - After a survey of this vast imaginative Menagerie I woke up by nearly falling off the sofa, found the heat had reached the apex of its malignity - Went out yachting - all the ladies in attendance - I was delightfully unhot, Ladies played game called memory - Scheme No 1 calls out name of prominent author No 2 Repeats this name and adds another room or, soon one has to remember a dozen names all of which must be repeated in the order given - result Miss Daisy had the best & I the poorest memory - We played another game called "pon honor," resultant of which is that if you are caught you must truthfully answer a question put by each player, These questions generally relate to the Amours of the players. - Arrived home at 7.30

Yacht brought in too far and left stranded by the
receding of the tide, Suppered, went out and ~~saw~~
saw some fire works set off by an unknown
sojourner in these Ozonic parts, afterwards went
over to Cottage Park at the kind invitation of the
Charming Mrs Roberts to hear the band play Pro
bono publico and her boy exclusivemente, Boy is
quite a progedy on the piano, plays with great
rapidity, his hand and fingers went like a buzz saw,
played a solemn piece which I imagined might be
God Kill the Queen, In walking back Miss Dgoe
got several boulders in her shoes, Miss Daisy
Smiled so sweetly all the evening that I imagined
a ray of ~~at~~ sunshine tried to pass her and got
stuck, Mrs Roberts caught cold in her arm its
Cough is better, home-bed-oblivion -

Woodside Villa July 19th 1885

Slept as sound as a bug in a barrel of morphine, Donned a
coiled and starched emblem of respectability - Eat food for
breakfast, Weather delightful - Canary seed orchestra started
up with same old tune, ancestors of this bird sang the self-same
tune 6000 years ago to Adam down on the Euphrates, way back
when Abel got a situation as the first angel - Read Sunday
Herald, learned of John Roach's failure - am sorry - he has been
pursued with great malignity by newspapers and others, from
ignorance I think - Americans ought to be proud of Roach
who started in life as a day laborer and became the giant
of industry and the greatest shipbuilder in the United States
employing thousands of men and feeding innumerable families
- What has he now for this 40 years of incessant work and
worry People who hound such men as these I would
invent a special Nadas, I would stricken them with the
chronic sciatic neuralgia and cause them to wander forever
stark naked within the arctic circle - Saw in same
paper account of base ball match, this struck me as
something unusual - Read more about that
immeasurable immensity of tact and beauty Madame

Recamier, I would like to see such a woman. Nature seems to be running her factory on another style of goods nowadays and won't switch back until long after I'm bald-headed — Damon went out to assist the tide in — Daisy told me something about a man who kept livery stable in Venice, In afternoon went out in yacht, on first trip all our folks, and lot of smaller people, sailed around for an hour returned and landed the abbreviated people — Started for Cottage Park where we took on board the Charming Mrs Roberts' guest Recamier, and a large lady friend whose name has twice got up and jumped out of my mind, Then sailed away for Rock buoy and for some occult reason Damon didn't stop and change his mind but headed for Liverpool went out two miles in ocean; undulations threatened to disturb the stability of the dinner of divers persons, returned at 7 pm. Then Damon took out a boat load of slaves of the Kitchen — Damon and I after his return study plans for our Floridian Gower in the lowlands of the peninsular Eden, within that charmed zone of beauty, where wafted from the table lands of the Orinoco and the dark Carib sea, perfumed zephyrs forever

Kiss the gorgeous flora, Rats! — Damon took the plans to Boston to place them into the hands of an Architecturalist to be reduced to a paper reality — Damon promised to ascertain probable cost chartering schooner to plough the Spanish main loaded with our hen coops — Dot came in and gave us a lot of girlish philosophy which amused us greatly. — Oh dear this celestial mud ball has made another revolution and no photograph yet received from the Chataquain Paragon of Perfection, How much longer will Hope dance on my intellect

Miss Igoo told me of a picture she had taken on a rock at Panama ny. There were several others in the group, interpolated so as to dilute the effect of Mina's Beauty, as she stated the picture was taken on a rock I immediately brought my scientific imagination to work to ascertain how the artist could have flowed collodion over a rock and put so many people inside his Camera, Miss Igoo kindly corrected her explanation by stating that a picture was taken by a Camera of a group on a rock, — Thus my mind was brought back from a suspicion of her verbal integrity to a belief in the honesty of her narrative

After supper Mrs. I, Daisy and Louise with myself as an incidental appendage walked over to the town of Ocean Spray, went into a drug store and bought some alleged candy, asked the gilded youth with the usual vacuous expression, if he had any nitric peroxide, he gave a wild stare of incomprehensibility. Then I simplified the name to nitric acid, which I hoped was within the scope of his understanding. A faint gleam of intelligence crept over his face whereupon he went into another room from which he returned with the remark that he didn't keep nitric acid - fancy a drug store without nitric acid, A drug store nowadays seems to consist of a frontage of Red Blue and green demijohns a soda fountain, Case with ^{bottles} candy and toothbrushes, a lot of almost empty ^{bottles} with death and stomacatic destruction written in Latin on them, all in charge of a young man with a hatchet shaped head, having ^{practically} laid out by a civil engineer, and a blank stare of mediocrity on his face, that by comparison would cause a gum indian in the Eden Musée look intellectual - On our return I carried the Terrealbian gum drops, - moon was

shining brightly - girls called my attention several times to beauty of the light from said moon shining upon the waters, couldn't appreciate it, was so busy taking a mental triangulation of the moon the two sides of said triangle meeting the base line of the earth at Woodside and Akron Ohio, Miss Lgoe told us about her love of ancient literature, how she loved to read latin, but couldn't, I told her I was so fond of Greek that I always rushed for the comedies of Aristophanes to read whenever I had the jumping toothache; Bed - Mine, Morning,

Wedside July 20 1865

Arose before anybody else — came down and went ^{out} to look at Mamma Earth and her green clothes — Breakfasted — Read aloud from Madame Recamiers memoirs for the ladies — Kept this up for an hour got as ~~hoarse~~ hoarse as a fog horn, think the ladies got jealous of Madame Recamier, — its so hot — I put everything off — Hot weather is the mother of procrastination — my energy is at ebb tide — Im getting calorically stupid — Tried to read some of the involved sentences in Miss Clevelands book, mind stumbled on a ponderous perioration and fell in between two paragraphs and lay unconscious for ten minutes — Smoked a cigar under the ^{alias} ~~alias~~ of Reina Victoria think it must have been ~~made~~ seasoned in a sewer — Mrs Clark told me a story about Louises mother singing in a company a song called I have no home, I have no home, somebody halloed out that he would provide her with a good home if she would stop, I understood Mrs Clark to say that this gentleman was a

Bookkeeper in a small pox hospital - Mrs. Q has placed fly paper all over the house. These cunning Engines of insectivorous destruction are doing a big business - One of the first things I do when I reach heaven is to ascertain what flies are made for - this done I'll be ready for business, perhaps I am too sanguine and may bring up at the other terminal and one of my punishments will be a general ukase from Satan to keep mum when Edison tries to get any entomological information - Satan is the scarecrow in the religious confid - Towards Sundown went with the ladies on yacht - Talked about love, cupid, Appollo, Adonis, ideal persons one of the ladies said she had never come across her ideal - I suggested she wait until the second Advent, - Damon steered the Galleon, Damons heart is so big it inclines him to Embonpoint - On shore it was hot enough to test Safes but on the water twas cool as a cucumber in an arctic cache - Mrs. Q has promised for three consecutive days to have some claims a la Toft, she has perspired her memory all away -

Been hunting around for some ants nests, so
I can have a good watch of them laying on the
grass - Don't seem to be any around - don't think
an ant could make a decent living in a land
where a yankee has to emigrate from to survive, -
For the first time in my life I have bought a pair
premeditatedly tight shoes - These shoes are small
and look nice my No 2 mind (acquired mind)
has succeeded in convincing my No 1 mind (primal
mind or heart) that it is pure vanity, conceit and
folly to suffer bodily pains that once person may
have grace the outcome of secret agony - Read the
funny column in the Traveller and went to bed,

Woodside July 21 1885 -

Slept splendidly - evidently I was inoculated
with isomnic Gactilli when a baby - arose early
went out to flirt with the flowers, & I wonder
if there are not microscopic orchids growing on
the notes of the air - Saw big field of squashes
throwing out their leafy tentacles to the wind
preparing to catch the little fleeting atom for
assimilation into its progeny the squash gourd
- A spider weaves its net to catch an
organized whole, how like this is the excitable
living plant, the leaves and stalk catch the
primal ^{free} atom, all ^{are} then arranged in an
organized whole; Heard a call from the house
that sounded like the ^{flow within speech} shriek of a lost angel,
it was a female voice three sizes too small
for the distance and was a call for break-fast
- after break-fast laid down on sofa, fell into
light draught sleep dreamed that in the depth
of space, on a bleak and gigantic planet the
solitary soul of the great Napoleon was the sole
inhabitant, I saw him as in the pictures, in

contemplative aspect with his blue eagle eye, amid
the howl of the tempest and the lashing of
gigantic waves high up on a jutting promontory
gazing out among the worlds + stars that stud
the depths of infinity. Miles above him circled
and swept the sky with ponderous wing the
imperial condor bearing in his talons a
message, then the scene Gusted - This comes from
reading about Napoleon in Madame Recamiers
Memoirs. Then my dream changed - Thought I
was looking out upon the sea, suddenly the air
was filled with millions of little cherubs as one
sees in Raphael's pictures each I thought was about
the size of a fly. they were perfectly formed + seemed
semi-transparent, each swept down to the surface
of the sea, reached out both their tiny hands
and grabbed a very small drop of water, and
flew upwards where they assembled and appeared
to form a cloud. This method of forming clouds
was so different from the method described in
Gauts Physics that I congratulated myself on
having learned the ~~trick~~ true method and was

thinking how I would gloat over the chagrin of those cold blooded Savans who would desecrate an angel or Goliath a live baby to study the perturbations of the human larynx, then this scheme was wrecked by my awakening - The weather being cool went out on Veranda to exercise my appreciation of nature, Saw bugs, butterflies as varied as Prangs Chromos, Birds innumerable, flowers with as great a variety of color as Calico for the African market, then to spoil the whole two poor miserable mortals came, who probably carry the idea that this world was created for them exclusively and that a large portion of the Creator's time was specially devoted to hearing requests, criticisms and complaints about the imperfection of the natural laws which regulate this mud ball - What a wonderfully small idea mankind has of the Almighty - My impression is that he has made unchangeable laws to govern this and billions of other worlds and that he has forgotten even the ~~self~~ existence of this little mote of ours ages ago. Why cant

man follow up and practice the teachings of his own conscience, mind his business, and not obtrude his purposely created finite mind in affairs that will be attended to without any volunteered advice,
— Came into the house at the request of the ladies and read aloud for two hours from the Memoirs Racamier — then talked on the subject of the tender passion, the ladies never seem to tire of this subject — then supper ~~some~~ Some Trovatores du Pavé made their appearance and commenced to play — I requested the distinguished honor of their presence on the Veranda — After supper weather being cool but rather windy, took our Trovatores on the yacht and all hands sailed out in the bay — Had to go around an arm of the bay to get coal — water splashed so I got dashed wet. Threw several times the water broke loose from the iron grasp of gravitation and jumped on my 65 dollar coat. But when one of the ladies got a small fragment of a drop on her dress ~~of course~~ orders were issued to make for port — landed and

took our Travellers to house several ladies
hiring houses for the summer brought their
husbands with them and helped sop up the
music - afterwards Mrs & Mr & hospitable
by firing off several champagne bottles and
some of those delightful Cookies, I do believe
I have a big bump for Cookies, The first entry
made by the recording angel on my behalf
was for stealing my mothers cookies, 11 o'clock
came and the pattering of many footsteps upon
the stairs signalled the coming birth of silence
only to be disturbed by the sonorous snore
of the aimable Damon and the demonic
laughter of the amatory family Cat

CHARLES BATCHELOR COLLECTION, 1871-1912

The Charles Batchelor Collection contains the personal, laboratory, and business records of Edison's principal assistant, Charles Batchelor (1845-1910). Batchelor's papers were donated to the Edison National Historic Site over the period 1957-1961 by his daughter, Emma Batchelor. Also included in the donation were letters and other documents relating to various members of Batchelor's family, including his wife, Rosanna, and his daughter, Emma.

Most of the material relating directly to Batchelor's association with Edison has been filmed. The documents appear on the microfilm in the following order: (1) Journals; (2) Notebooks; (3) Patents; (4) Unbound Documents; (5) Letterbooks; (6) Accounts; (7) Scrapbooks.

(1) Journals. The eight books in this set contain a daily record of Batchelor's personal and professional activities during much of the period between 1877 and 1908. The entries in the first four books cover the years 1877-1878, 1883, and 1886-1892 and deal extensively with Edison, his inventions, and his businesses. These books have been filmed in their entirety. The remaining books date from the period 1898-1908, after Batchelor left Edison's employ. Included in one of these books are reminiscences by Batchelor about several of Edison's principal inventions. The last book contains notes by Batchelor about his childhood — the first part of an unfinished autobiography. Except for the reminiscences about Edison, the material in these books has not been filmed.

(2) Notebooks. The eighteen books in this set contain notes and drawings relating to experiments conducted by Batchelor, Edison, and others during the years 1874-1909. Fifteen books relate directly to work performed for Edison. All of these books have been filmed, with the exception of one book from the 1890s recording routine ore assays for Edison's mining operations. Three other notebooks have not been filmed: two books from the early 1880s (not by Batchelor) containing tests of French storage batteries and comparisons of Edison's electric lighting system with other systems; and one personal notebook containing notes and experiments by Batchelor from 1889 through 1905.

(3) Patents. Included in this series is one volume of Edison's British patents (1872-1880) and one volume of Edison's U.S. patents (1869-1879). Also included are numerous unbound patents issued to Edison, Batchelor, and other inventors. Only the volume of Edison's British patents has been filmed. A complete set of Edison's U.S. patents can be found in Thomas A. Edison Papers Microfilm Edison, Part I, reels 1-2.

(4) Unbound Documents. These documents cover the years 1871-1910 and consist of correspondence, technical notes, agreements, accounts, and other items relating primarily to Batchelor's work with Edison. Most of the material concerns Batchelor's activities during the 1880s as manager of the Edison electric light interests in France (1881-1884) and as manager of the Edison Machine Works (1884-1888). A few documents pertain to Batchelor's work as Edison's principal laboratory assistant and to the operations of the Edison Phonograph Works. Batchelor's family correspondence, along with documents relating to the period after he left Edison's employ, have not been filmed.

(5) Letterbooks. The six books in this set cover the years 1875-1890 and contain copies of Batchelor's personal and business correspondence. Many of the letters discuss Edison, his inventions, and his businesses. Selections from all six books have been filmed.

(6) Accounts. The three books in this set cover the years 1878-1893 and contain Batchelor's personal accounts. Only one book, which includes Batchelor's accounts with Edison, has been filmed.

(7) Scrapbooks. The fourteen books in this set cover the years 1876-1912. The clippings in six of the scrapbooks relate primarily to Edison and his inventions during the years 1876-1893. Another scrapbook contains correspondence from the years 1881-1882. These books have been filmed. Seven other books have not been filmed: a scrapbook of engravings; three scrapbooks containing prices and specifications for Edison's dynamos; and three scrapbooks, dating from the 1890s and 1900s, which contain only scattered references to Edison.

In addition to the items discussed above, the Batchelor Collection also contains a number of miscellaneous manuscripts, printed documents, photographs, and artifacts. Included among this miscellaneous material are photograph albums, portraits of Batchelor and Edison, an autograph collection, and a stamp collection. The artifact collection includes several light bulbs, numerous medals, and a bronze bust of Edison. The printed material consists primarily of trade catalogs, litigation records (filmed elsewhere), and a few newspaper and journal articles.

CHARLES BATCHELOR JOURNALS, 1877-1908

The eight books in this set contain a daily record of Batchelor's personal and professional activities during much of the period between 1877 and 1908. The first four books deal extensively with Edison, his inventions, and his businesses. Included are entries relating to the development of Edison's phonograph and telephone; Batchelor's role as Edison's representative in Paris; the construction and operation of the West Orange laboratory; and the technical and business aspects of electric lighting, ore milling, and the phonograph during the early West Orange period. The remaining books date from the period after Batchelor left Edison's employ. Included in one of these books are reminiscences by Batchelor about several of Edison's principal inventions. The last book contains notes by Batchelor about his childhood — the first part of an unfinished autobiography.

The following books have been filmed:

1. Cat. 1233 (1877-1878)
2. Cat. 1343 (1883)
3. Cat. 1336 (1886-1887)
4. Cat. 1337 (1887-1892)
5. Cat. 1339 (1905-1908) [reminiscences only]

The following books have not been filmed:

1. Cat. 1345 (1898-1902)
2. Cat. 1338 (1903-1905)
3. Cat. 1344 (1907)

Charles Batchelor Journal, Cat. 1233

This journal covers the period January 1, 1877-April 8, 1878 and contains entries by Batchelor about his experiments on the electric pen, phonograph, and telephone. Other entries deal with the quadruplex telegraph and Batchelor's personal affairs. The book contains 365 pages, numbered by an archivist. After writing the entry for December 31, 1877, Batchelor returned to the first page of the book and began recording entries for 1878. Pages 1-98 (January 1-April 8) thus contain entries for both 1877 and 1878. The front cover is stamped "Diary 1877."

INTEREST TABLE.
SEVEN PER CENT

[illegible]

Figure 1. The effect of the concentration of the inhibitor on the rate of polymerization of the monomer.

U. S. MONEY ORDERS.

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[illegible]

Rosa J. and Emma drove to Newark in sleigh very cold and good sleighing.

Tuesday Jan 8 1878.
 Went to Newark & called on Mr. Baird took Mrs.
 Emma & Mary & Kate.
 Postage on train
 2 - 6 - 12
 47 - 1 - 47
 53 - 2 - 66
 93 - 3 - 279
 94 - P.C. 94
 \$496

TUESDAY, JANUARY 2, 1877.

Wednesday Jan 2 1878
Went to Newark and took direct telephone for
Hurray. Dined with Hurray. & afterwards
went to the better company with him
for about 10 minutes
Saw Mr. Barton in New York.

WEDNESDAY, JANUARY 3, 1877.

Thursday Jan 3. 1878
Worked on telephone all day. & s. Monographs

THURSDAY, JANUARY 4, 1877.

Wheat put out well up on its place -

Friday Jan 4 1877
Worked on telephones & Stereographs
Kurtin here all day about 1/2 pm

FRIDAY, JANUARY 5, 1877.

Saturday Jan 5, 1878
Worked on Telephones & Stereographs

SATURDAY, JANUARY 6, 1877

Sunday Jan 6 1877
Telephone all day

SUNDAY, JANUARY 7, 1877.

Monday Jan 7. 78.
Went to New York
Set up telephone circuit between McWalker
room and 39 40 Building
Went to Kahn's Shop about telephones
Went to Ruzmann's Shop about telephones

MONDAY, JANUARY 8, 1877.

Tuesday Jan 8 1878
Cairn Jim at New York setting up telephone
Home all day

TUESDAY, JANUARY 9, 1877.

Wednesday Jan 9 1878
Home all day except on Tel. & Amosquel.
St. Green, W. Schenckhorn & a few reporters
here today

WEDNESDAY, JANUARY 10, 1877.

Thursday Jan 10 1878
Worked all day on Telephone and Phonograph

THURSDAY, JANUARY 11, 1877.

Edison found out this night that when two
detectors were put into ^{different} solution and the circuit
opened and closed that there was a sound given off.

Friday Jan 11 1878
Johnson and Mr. Chewer here to-day
Mr. McKenzie here at night

FRIDAY, JANUARY 12, 1877.

Saturday Jan 12 1877
Worked all day on Phonograph & Telephone
McKenzie came

SATURDAY, JANUARY 13, 1877

Attended Court on Suit of Carl V. Odier
Odier could not produce bars or copy of it and the
case was left till some future time to be appointed by
mutual consent of both sides. SB

Sunday 1877
McKenzie here and tested with Bell's
+ our telephone all day

SUNDAY, JANUARY 14, 1877.

Made some experiments on Capillary force of oil
see Experimental researches Vol. 1, page.

Sunday Jan 14 (1877)
Worked on telephones all day

MONDAY, JANUARY 15, 1877.

Met Bliss in New York today.

Tuesday Jan 15th
Jen showed telephone & phonograph
at Metuchen to a church
Edison A. Johnson gave Otton a
test of all the telephones from
1878 & away Jen's music came in
as Otton said that Edison's
instrument was the best articulation
& loudest.

TUESDAY, JANUARY 16, 1877.

Experimented at night on the sound produced from the escape of gas at the electrodes in different situations on closing the circuit.

The Powell bros were at Laboratory today.

Wednesday Jan 16 1877
Worked on telephone all day

WEDNESDAY, JANUARY 17, 1877.

Edison Ag. I opened our plan of forming a company of the Foreign Interest of Electric Gen & 9. He seems to be thought very favorably of it.
Worked on autographic rotary power press
B. R. Vol 1 Page

Thursday Jan 17 1878
Showed Phonograph, Speaking & singing
telephones to Cooper Union, American
Institute at night.

THURSDAY, JANUARY 18, 1877.

Friday Jan 18 1878
All day in Phonograph Telephone.
McCloughlin & Boyd Elliott came in
afternoon
Krugman brought coils & bells.

FRIDAY, JANUARY 19, 1877.

Edison, Batchelor, and Johnson inventors signed
contract with the Amn. Novelty Co. turning over to
them the rights in the Edison machine, the Edison indicator.

Saturday Jan 19 1878
Edison, wife, I and Rose went to see Heller.
Worked on Phonograph & telephone all
day.

SATURDAY, JANUARY 20, 1877.

Bought Nuttall's dictionary, Morris' notes & 1000 900
Also Murray's 'household dev.'
New York to-day.

Sunday Jan 21 1877
Worked on Phonograph Telephone all day

SUNDAY, JANUARY 21, 1877.

Gave up smoking as it does not seem to
agree with me.
Wrote to Henry for Edison respecting Grace.

Monday Jan 22 1877
Phonograph Telephone all day

MONDAY, JANUARY 22, 1877.

Stayed home working on a new rotary press
& P. 1st page.

Tuesday Jan 22 1878

Mr. Quakas here today & his telephone
worked on Monograph & telephone all day.
Packed & shipped Quakas' goods.

Mr. Ettinger & friends here at night
Organ came.

TUESDAY, JANUARY 23, 1877.

Stayed home working on a new rotary press

Wednesday Jan 23 1878
Bagman here in evening gave him
drawing for new box.

Worked all day on telephone & Monograph

20
WEDNESDAY, JANUARY 24, 1877.

Layed home working on new rotary press

Thursday Jan 24 1878
Went to New York and took Peaslee with
He sailed today on Cimbria for
Cebu.

21
THURSDAY, JANUARY 25, 1877.

Went to New York. Press very much delayed
from Chicago.

Worked till 23 AM 26th on rotary
press for duplicating writing.

Right eye very sore all night with cold.

Friday Jan 25 1878
Worked all day on Monograph

26
FRIDAY, JANUARY 26, 1877.

Lift eye very sore all night - with cold.
New York all day.

Saturday Jan. 26th 1878
Worked on Phonograph all day
Two students from Stevens Institute here
all day
H. Thau here all morning

27
SATURDAY, JANUARY 27, 1877.

Rosa and I went to Union square Theatre to
see Clara Morris in Miss Mollie.
Night 7th 6, 7, 8, 11, 11.53, of lunch at 5 o'clock.
New York all day.

Sunday Jan 27 1878
Worked all day on Phonograph and telephone

SUNDAY, JANUARY 28, 1877.

Monday Jan 28, 1877.

Went to New York at 11th Edison and I
Dined at night with C. H. Chubb and went to
Tony Pastor's afterwards went to N. O. Operating
room at 2 A.M. then slept at Actor's house

MONDAY, JANUARY 29, 1877.

Went to New York.

Received C.O.D. \$100.00 from Dayton and Co -
Edison gave Order and broached the subject of getting
100 per week to pay expenses at laboratory.
Received news from Trenton that had been on time.

Tuesday Jan 29 1877

Went to Ansonia Conn with James Swann, Edison.
Went through the American Brass and Clock
factories
Worked till 2 A.M. on Phonograph got lost
talking on copper instead of tin-plate.

30
TUESDAY, JANUARY 30, 1877.

Went to New York and wrote all assignments
of invention to Novelty Co.
Worked at night on Rotary press for duplicating copy.

Wednesday Jan 31 1878.
Ansonia Conn all day with Edison and
Danks and Fleming working on Phonograph.
Came home at night.

31
WEDNESDAY, JANUARY 31, 1877.

Wrote Tom in relation to the Brown Tel Co.
Wrote Robert Greenland about 12 small trials.

Thursday Jan 31 1878
Worked all day on telephone.
First snow of the winter.

THURSDAY, FEBRUARY 1, 1877.

Went to New York to get copper acid Rubber belt for
rotary press. Returned 12 H.
Selected 3 letters from Edison & sent to
James and Mason at West Point.
Made set on rotary press and automatic feed.

Friday, Feb 1st, 1877.
Went to New York all day.

FRIDAY, FEBRUARY 2, 1877.

Stayed at home today. As sent 28 letters to New York.
Worked all day on rotary press (duplicating).

Saturday Feb 2 1877
Worked all day on telephones.

SATURDAY, FEBRUARY 3, 1877.

Went to New York

Saw Fogg & Co. they had sample of printing done in New York
which they wanted to know what was the matter with it
but I and took about 40 splendid copies of it, they
were very much surprised.
Wrote Tom, Murray.

Sunday Feb 3 1877

All day on telephone and phonograph

SUNDAY, FEBRUARY 4, 1877.

Went out in the woods with Jim
Worked on Battery at night -

Monday Feb 4 1877

All day on Telephone tried experiment
with Bentley of Philadelphia we talked
to him and he got it all right we also
talked to Washington
Steven Smetace sent boy for Phonograph

MONDAY, FEBRUARY 5, 1877.

Went to New York.

Sent 2 letters and one electotype to Henry Deyden.
Worked all night on Rotary Autographic press

Tuesday Feb 6 1877

Went to New York today

Called on Bergmann. He gave me chkt for \$25 -

TUESDAY, FEBRUARY 6, 1877.

Went to New York -

Sent goods to Muller by 'City of New York' collect at
Durand - Friday -

Wednesday Feb 6 1877

Designed model phonograph for Ducrest
sent at Paris collection
started on the type.

WEDNESDAY, FEBRUARY 7, 1877.

Went to New York today
Bought letter and parchment for Edison speaking
telegraph -
Finished rotary press experiments having got a
self feed and all necessary

Thursday, Feb 8 1877
Worked on designing phonograph.

THURSDAY, FEBRUARY 8, 1877.

Went to New York
Worked at night on Rotary press got the
experiments all tried and it now remains
to design the instrument.

Friday Feb 8 1877.
New York Called at Baymans, Coaklets,
Fitch & Mearns, Hays, Patterson &c.
Made model drawing for suit for show principle
of Edison speaking phonograph.

Edison got offer for speaking phonograph
by Cable from Widdows, Felt & Hall,
before he called back. wrote letter to them

40
FRIDAY, FEBRUARY 9, 1877.

New York today.

Collected 117.12 of Demand.

Spent 2 P.M. at laboratory today highly delighted
started working on Talking telegraph design
aiming to get the same conditions as the thing
by increasing or decreasing the resistance of the
circuit according as you speak loud or soft.

Saturday Feb 9 1877
Designing Monograph all day

41
SATURDAY, FEBRUARY 10, 1877.

Went to New York

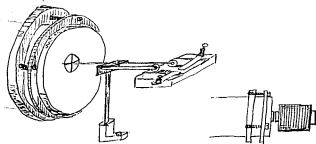
Letter from Robert Quilley saying he could not pay
note for 60 or 90 days.

Sunday Feb 10 1877
Designing Monograph —

SUNDAY, FEBRUARY 11, 1877.

MONDAY, FEBRUARY 12, 1877.

Stayed at home and worked all day on a new
talking telegraph
Letter from Tom, Mother, & Father,



TUESDAY, FEBRUARY 13, 1877.

Worked all day on Talking Telegraph.
Rief at laboratory at night off at 9 P.M.
Net Chest from W. A. My. & \$100.49 —
Selling wire, not much good as yet very
little encouragement from instruments.

WEDNESDAY, FEBRUARY 14, 1877.

Went to New York to-day
Entered about 7 o'clock up the St. of Anna has
Worked on Talking Telegraph at night
Anna sick all night with sore throat but better
toward morning. —

THURSDAY, FEBRUARY 15, 1877.

Went to New York today. —

Gamma better to-day but still a little unwell.

PAT 25-

Fine

FRIDAY, FEBRUARY 16, 1877.

Worked in Laboratory all day on Talking, Polygraph

Received note of Robert Williamson back unpaid.

SATURDAY, FEBRUARY 17, 1877.

New York to day -
Gave McLaughlin 1 doz eggs
Got them sent clothes \$50 -
Paid Stephens rent to \$26.14

RRT 48

SUNDAY, FEBRUARY 18, 1877.

Laboratory all day designing Rotary press.
Horse. at day, all day tending some over there.
McLaughlin some ore found on Carmans property which
appears to be full of iron.
Wrote till 8 AM 19th

SATURDAY, FEBRUARY 17, 1877.

New York to day -
Gave McLaughlin 1 doz eggs
Got new suit clothes \$50 -
Paid Stephens rent 5 Feb 1st

7:15 T 4:30 m

SUNDAY, FEBRUARY 18, 1877.

Laboratory all day designing rotary press.
Horace to day, all day taking some over there.
McLaughlin some ore found in Carmans' property which
appears to be full of iron.
Wrote till 3 AM 19th

MONDAY, FEBRUARY 19, 1877.

Laboratory all day on Rotary press designs
Snow storm about 4 inch deep this morning.

TUESDAY, FEBRUARY 20, 1877.

New York all day. R.T. 40 m.
Worked all night on Talking telegraph made
the 8 reed instrument
S

WEDNESDAY, FEBRUARY 21, 1877.

Went to New York today. RRT 48.
Red check for 200 - from N. Guilford & Co.
credited on note of 1200 -
Rec'd 200⁰⁰ from N. & W. J. C. on 2/21 & 2/22 P.M.
Sent 3 to 2 presser & Hunter & Hunter check 60⁰⁰
Letter from Jim with photos of his terms -

Thursday Feb 21 1877
Gave photograph telephone census for W. R. K. at church in 26th St & 5th Ave New York
I did the business at the N. Y. Tel. Co for
them

THURSDAY, FEBRUARY 22, 1877.

Home all day. Fixed nest in hen coop -
This time in the middle of day
Kora and I went to New York at night
and visited Kelly & Son ministers
RRT 48

Friday Feb 22 1877
Singing all day on photograph taking
stock and try.

FRIDAY, FEBRUARY 23, 1877.

Went to New York today
 Calls from Electric Writing Co for 50 pens 100 Stans
 Got the 2 batteries sent by them this day.

RRT 45-

Saturday Feb 23 1877
 Dismissing all day on Throgs
 Neckhead + ... down hill today

SATURDAY, FEBRUARY 24, 1877.

Went to New York (very wet)

RRT 45.

56
SUNDAY, FEBRUARY 25, 1877.

Laboratory work of the day.

57
MONDAY, FEBRUARY 26, 1877.

Went to New York today. R. R. 48.
Went up to the Western Union with G. H. Stein.
Was introduced to Genl. Stager, Genl. St. George,
the Genl. afterwards accompanied Stein and
to Menlo Park where Edison showed him
the paper. In talking over the royalty on
the Foreign Electric pen we concluded that
three dollars was enough and about right.

TUESDAY, FEBRUARY 27, 1877.

Went to New York and intended to start for
Chicago at 1:30 p.m. but Edison forgot the suitcase
of R.R. tickets & could not go.
Took supper with Riff and Alice at Parkers
Went to Olympic Theatre with Riff & Edison &
saw Round the Clock. R.R.T. 24 out.
Slept at Uncle Henry's N.Y.

Wednesday Feb 28 1877
McLaughlin & McNamee all night here
Lee & Alton all day

WEDNESDAY, FEBRUARY 28, 1877.

Breakfast with Riff and Edison at Rochester
Got through ticket to Chicago via N.Y.C. Grand
Central and Mid. Cent. 190 - started at 11 AM.
Arrived in Albany at 4:20 PM.
Went up to look at the new State house
It is still unfinished but a very fine building.
Left Albany at 8:15 PM for Buffalo.
R.R.T. 145 miles

Thursday Feb 29 1877
Lee & Alton all day

THURSDAY, MARCH 1, 1877.

Arrived at Buffalo YAM TWT 303 miles
Breakfasted and took Grand Trunk & Port
Huron.

Bridge over the Niagara River at East Buffalo
is exceedingly fine.

Scenery all along the route is very snow-covered,
nothing but partially cleared woods. At Paris
the view was very pretty, I lay at the bottom
of a deep valley on the bank of a stream.

Arrived at Parma on the Canada side of the
St. Clair River at 4:30 p.m.

RRT 196 miles
The St. Clair River is very beautiful and clear as
crystal it is very rapid about 8 miles per hour.
At this point the Grand Trunk Cars are ferried
across by boats built especially for the purpose
in London Eng.

Stayed at Pitt Edison's house at night.

Friday Mch 2 1877

Mrs. Kinsley here all day.

Photograph & telephone all day
Jen went to Philadelphia today.

FRIDAY, MARCH 2, 1877.

DE

Went over with Al & Pitt & learned to make
arrangement about the control of the Horse & R
there. Edison said if he could get back the money
that he put in there he would be satisfied. His
proposal would have been taken immediately if
Pitt had not suddenly remembered that he had
put something into the road before Edison had
taken the shares and he said he did not under-
stand it that way. He then proposed that the
Lynnington Bros should lend Edison \$500 for 2 years
at 10 percent and in return Edison to give them note
secured by Stock (perhaps) which they were to hold &
vote but which Edison was to get the dividends on.
Edison then left \$100 with them to pay his share
of an assessment they were to make to pay off all
indebtedness & commitment to pay dividends
immediately.

Port Huron is a very pretty little place with
about 10000 inhabitants. A good share, a
handsome large part open and custom house
occupies a large territory.

Saturday March 2 1877

George Johnson Agnew Harrison here today
came to make arrangements about foreign patents
for Photograph, Pucka telegraphed to take our
foreign patents.

SATURDAY, MARCH 3, 1877.

Went up with Samuel Edison to see Cass. I bought
for K'oa some time ago. It was very rainy and
cold. Cass got it transferred there and
left the deed with J. W. Edison. I got recorded
Sept at 7:45 pm for Chicago R.R.T. 62.

Sunday March 3 1877

SUNDAY, MARCH 4, 1877.

Arrived in Chicago at 11 a.m. and put up
at Remont house on Lake Street. In the after-
noon I went to the Waterworks and also went
up the tower and got a good view of the City.

MONDAY, MARCH 8, 1877.

Went to Martin Elect. Mfg. Co. shop in the morning. met Alex, went with him to Genl. Taylor's office for an hour, through the H.O. St. office, Fire department.

Dined with Alex at Palmer's house.

Went to McVickers' studio at night. Evening

R.P.T.

Went to see Wheeler 142 La Salle St

TUESDAY, MARCH 13, 1877.

Martin Electric Mfg. in morning.
Bought jewelry set for Rosa.

Cham for Emma

Cham for Mary

2 Books for both

Got settlement of all accounts with H. Gifford
and paid for our Foreign pen & date.

Alex Dined with me at Fremont house

Left Chicago at 8:15 pm. Train via
Hotel Crail for New York. Yes.

MONDAY, MARCH 5, 1877.

M

Went to Western Electric shop in the morning, met Bliss, went with him to Gent Taylor's office for an hour, through the N.O. Tel. office, Fire department.

Dined with Bliss at Palmer's House.

Went to McPeters' Theatre at night. Evening

RPT.

Went to see Wheeler 142 La Salle St.

TUESDAY, MARCH 6, 1877.

Western Electric shop in morning.
Bought jewelry set for Rosa.

Cham for Anna

Cham for Mary

2 books for both.

Got settlement of all account with H. C. H. & Co.

and paid for our Foreign fees to date.

Bliss dined with me at Palmer's House.

Left Chicago at 8:15 pm. Train in
Hotel Crail for New York. Res.

WEDNESDAY, MARCH 7, 1877.

Breakfast Dinner & supper on train
Arrived Pittsburgh 12 noon RPT. 461 mi.
Scenery between Pittsburgh and Altoona very
beautiful although still early in the year
and so frigid.

Thursday March 7 1877
Got Holmes & Wells home.
Trunks got mailed by Washington
Express

THURSDAY, MARCH 8, 1877.

Arrived at Elizabeth at 5:31 A.M. 530 mi.
Waited here till 7:30 and took train to
Kent Park 20 mi.
Went to Newark and deposited check and
afterwards to New York 21 mi.

FRIDAY, MARCH 9, 1877

Laboratory all day, closing up accounts
of Penn. Co. Paid all bills to Sherman, Adams
and Gilchrist.

Left ~~Philadelphia~~ March 9 1877
Got to New York 11:45. ~~Second~~ got
letter by Capt. ~~Wain~~ ~~Wain~~
Am home from Philadelphia today
New Brunswick bridge burned down
Telephone all day

SATURDAY, MARCH 10, 1877

New York. - No process ready to ship.
R.R. 5 4.5 miles.

Total R.R. Travel this year
- 2934 miles -

SUNDAY, MARCH 11, 1877.

Went out in morning - in woods.

MONDAY, MARCH 12, 1877.

New York & day
Adrian came home today at 9 A.M.
Found out that there had been no plateau on
any of the batteries sent out by W. Edgely &
got 4 for Butler & 4 for Holland took out the
pens & battery top & took to Laboratory to pen.
R. R. T. 2nd mile

Tuesday March 12 1877
Left out Philadelphia by New York
120 miles but very good - direct 89
miles very fair after we got through
found out Warrumitten had been heading
circum & washed fluff. Throat took
afterwards made a hole or ten chaps
& used spinal strings & press fluff
kept getting better as we used fluff
strings & finally put on solid tube &
got better articulation than on anything
else

TUESDAY, MARCH 13, 1877.

Went to New York today R R 48 min
Moved from 41 Day St to 28 New Church St
Sent 1 press to Bellingham Rev. Holland
Worked at night on Talking Telegraph & Home

Wednesday Mcl 13 1878

Good telephone test with Philadelphia
Jessie Brumelle here
Mr James " } at night
McLaughlin —

WEDNESDAY, MARCH 14, 1877.

Went to New York today
Sent 4 No 1 pen complete to Butler, Havana.
Edison has given books over the Embroider to N. O. Wells
put it up in Room 2^d floor.
Had Remis for me a pen etc. for Handelman

Thursday, MCL 14 1878

Join in Philadelphia
Edison & New York
working on Telephone & Phonograph

THURSDAY, MARCH 18, 1877.

Went to New York R.R. at
Custom at 49 W 165th bought some household fur-
niture.
Wrote an Talking Telegraph at night.

Friday Mch 18 1878
W & M Atkins went to New Brunswick.
Wrote all day on Talking Telegraph & photographs.

FRIDAY, MARCH 16, 1877.

Went to New York R.R. at
Wrote at night on Talking Telegraph.
Letter from Father as before.

Saturday March 16 1878

SATURDAY, MARCH 17, 1877.

R.E.

Went to New York

R.R.T. 40

I was doubtful about the goods bought at auction
on Thursday and wrote Longden up to investigate
we find everything O.K. - - - - -

Had Mr. Commission on Berlin from

SUNDAY, MARCH 18, 1877.

277

Worked all day on Speaking telegraph

MONDAY, MARCH 19, 1877.

Went to New York to-day. ^{at 10}
Worked all night on talking telegraph. At 4 P.M.
in New York and Jim and I at laboratory
during the day they had a great many people
here & Olan, Menot, Barrow, etc.

Thursday Mch 19 1877
Jim sailed to Montreal for England

TUESDAY, MARCH 20, 1877.

Went to New York to-day. ^{at 10}
Worked all night on speaking telegraph. Adam
myself and Jim at laboratory and Charles at
N.O. office. put on steel wire diaphragm on
Newcom.

Wednesday Mch 21 1877
Pigott, Johnson, & Hales, here to night.
Philadelphia wants test tonight
with Frankly, but they made a
bull of it and we waited till 1 o'clock

WEDNESDAY, MARCH 21, 1877.

F

Went to New York.

R. R. T. 44.

Brought South American directory
trotted on Dimegraph (in order to get it
ready for James & Palmer who are thinking of
calling hold of it) at N. O. office room 29. with
Edison & C. P. Bliss

Home on 12 train

Stk. Otk. in town. Samuel Edison arrived at
Herald Park

Thursday Mch 21st 1878
W. Barton here today
Bliss here at night

THURSDAY, MARCH 22, 1877.

Went to New York

45 on

Edison moved from room 29 to 29 121 Broadway
& Room 59, 5th floor.

Edison signed contract with W. H. & C. Co. by
which he gets \$50 per week to help pay expenses of
his experiments & they have the option of his telegraph
is invention (except chemical automatic) & work on
possibly as they shall decide
Kara went to Newark & bought some things
at Smith's auction.

FRIDAY, MARCH 23, 1877.

Went to New York
Roma went to Newark
Worked all night on Linging telegraph machine
a good solid receive with no diaprazim.

SATURDAY, MARCH 24, 1877.



Went to New York today PPT 48 m
Took a bath at Courtinids street

[illegible]

SUNDAY, MARCH 25, 1877.

Worked in Laboratory and finished my speaking telegraph receiver made an iron disc also a few better one.

Edison got a new theory in regard to magnets he thinks that if a single magnet will give magnetism at the end of two feet then put in more magnets & project as much farther on the principle I shall

try it. He thinks also that as the magnets feel worse like this magnet shown  and as Parague says a long one magnet like this  showing it travels further than he thinks that a number of magnets placed like the first figure will give intensity. He also thinks that it follows the same law as the ridge for line.



MONDAY, MARCH 26, 1877.

Stayed in Hunt Park

Worked on Speaking telegraph got good reading through a duplex plumbago points & a large turning from fasteners at both ends.

TUESDAY, MARCH 27, 1877.

Went to New York today

Left at 10:40 a.m. - N.Y.

Spent the day in the city. Saw the Statue of Liberty and the city from the water.

WEDNESDAY, MARCH 28, 1877.

Went to New York today took Meunier to get out the New Zealand papers.

Took over Edison & acoustic folks.

Made all night on talking telegraph.

THURSDAY, MARCH 29, 1877

Went to New York. In sleep at all last night. Sent me via 2 Press to Gallatin. England from (or) arrived today.

FRIDAY, MARCH 30, 1877

Went to New York today. Home all night at 191 Broadway on 24th. 57 Taking telegraph and designing the embuier. Edison got permission from Edison for Murray to make a few of them. James & Palmer were up to see Telephone in the afternoon but it did not work well. During the evening we got excellent talking all the N.Y. fellows could get it.

90 SATURDAY, MARCH 31, 1877.

Left all night on table at 191. Bedway
Hurray took away Embroidered Towels
20.00

91 SUNDAY, APRIL 1, 1877.

Monday April 1st 1877
Went to Philadelphia to test and
New York talked with paper can

MONDAY, APRIL 2, 1877.

New to New York

40 miles

Worked on evening telegraph at night. No puncture!



Studied Murray on business & manufacturing and manufacture sex.

Visited Andrew to work round house at 12/10 per day.

Sunday April 2 1877

Went to Philadelphia to test with New York
Shelley came down also with his

Magneto

Eden Bentley & many others arrived
over the work but could not get a single
word over Shelley.

TUESDAY, APRIL 3, 1877.

New to New York

40 miles

Called at Murray and took patterns of contrav.
Worked at night on my 4 tele. magneto.

As about 9 o'clock heard 'Telephone' working on
N.Y. was 11/7 and put me in communication on, got
it beautiful 'land rose of lumines'! Old folks at
home! do beautiful high into very clear and
altogether very good.

Murray had his connect at the laboratory and we got
it very perfect on our 'Telephone'!

- Andrew working on house

- Brought home Edison laboratory with force from
Pennet.

Took over model of 'hook print post power' pen
(mechanical) & office. Model made by Murray.

WEDNESDAY, APRIL 4, 1877.

New York today
Stayed till 12 midnight and called 40 of Rs 50
pen for England
Got piping for front gutter
Andrew working on house

THURSDAY, APRIL 5, 1877.

Went to New York today
Saw at Meran & letter Havana
Brought remainder of England pen to Laboratory &
made right, fixed them all.
Riff at Laboratory & stayed all night at Edison

Friday, April 5, 1877

Went to Domestic Tel. Co. & settled
Up with Edison.

FRIDAY, APRIL 6, 1877

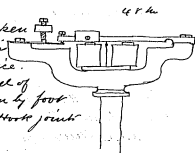
Went to New York today
 Then got lost at Laboratory and we caught him and
 afterwards visited him.

Saturday April 6 1877
 Paid Grod-Alley for suit of suit of Edison
 Went with Edison to A.P. & for 5 minutes
 left 100 to L.F. Wilbur for Edison, by Express
 under the name of G. Wilson 25 New Church St.

Talked with Professor Barker at University
 of Pennsylvania 12 pm hour.

SATURDAY, APRIL 7, 1877

Went to New York
 Menus started on Reed pen
 Howas to make 2, one for Ben
 and the other for Patent office
 I sent up to turn the model of
 mechanism pen driven by foot
 power & connected by Hook joint



SUNDAY, APRIL 8, 1877.

Worked on Speaker Telegraph

Monday, April 1, 1877
Showed plans to Benbank Herdant
Judge Huntziff

MONDAY, APRIL 9, 1877.

Worked on Speaker for Speaking Telegraph

TUESDAY, APRIL 10, 1877.

Worked on *Speaker* for *speaking telegraph*

WEDNESDAY, APRIL 11, 1877.

Went to New York today

Took the *Read* train to New York

Worked on *Speaker* telegraph at night

THURSDAY, APRIL 12, 1877.

Went to New York
Met Maria at Newark in afternoon
Worked at night on speaker & talking telegraph

FRIDAY, APRIL 13, 1877.

Laboratory all day working on Speaker Polygraph
Had a telegram from New York in afternoon
arranged the foreign matter and work done
New York will party next week.

SATURDAY, APRIL 14, 1877.

New York today
Had a conversation with John, Edwin & James about
selling James some stock in the B.C. Ry. Co. we
agreed to let him have for \$400, forty four hundred
shares for (1875) fifteen hundred dollars. he will think
about it.

Order from Kansas for (12) tickets now complete.

Order from Switzerland for (11) tickets now complete.

Went to Wallack's theatre at night with Rosa and saw
my awful dad!

Aunt Clara came to-day

SUNDAY, APRIL 15, 1877.

George Caldwell here to-day
Aunt Clara here.

MONDAY, APRIL 16, 1877.

New York.

48. miles

Saw 5 complete pens of 11 blanks + 6
Billiard at Laboratory at night
Worked on 'Jungo' telegraph at night.

TUESDAY, APRIL 17, 1877.

New York

--- 48. miles

Worked at night on telegraph

10 WEDNESDAY, APRIL 18, 1877.

New York

Worked on new transmitter for speaking telegraph.

He found that the ^{electro}electro-magnetic principle applied
to speaking telegraph made it much better

11 THURSDAY, APRIL 19, 1877.

Stayed at Laboratory all day.

FRIDAY, APRIL 20, 1877.

SATURDAY, APRIL 21, 1877.

Went to New York
called at Stewart to attend suit. Called on Edison
and put off for a week.
After arriving in New York he introduced me to Mr. Allen
who dined with us and afterwards came out to Morris
Park at night.
Made my New England Alman



SUNDAY, APRIL 22, 1877.

Home all day
Laboratory at night. no made rectification with
very successfully and before 2 A.M.

MONDAY, APRIL 23, 1877.

New York today
Made contact out for Foreign Pen
Mr Wilson Director of Penn. H. H. at Laboratory
knights

TUESDAY, APRIL 24, 1877.

New York
 Will Johnson in New York today
 Adam Hatchels, & Adams signed contract
 for Foreign Pen -
 Took on Reed Pen -

WEDNESDAY, APRIL 25, 1877.

New York
 Attended Court in the Int. 48 mile
 against A & T & Superior court.
 Holland & Adams signed contract for
 Foreign Pen manufacture and sale
 W. J. Johnson left for England - (Caird)

116 THURSDAY, APRIL 26, 1877.

New York today

40
Attended Court in the Quadruplex suit before
on the stand -----

Also Holland at Laboratory at night -----

117 FRIDAY, APRIL 27, 1877.

New York

40
Attended Court in Quadruplex suit
Stayed at night to get off Bureau order of Penn

118 SATURDAY, APRIL 28, 1877.

New York.

Called at Sumner's coming back in transit. -

45 miles.

119 SUNDAY, APRIL 29, 1877.

All day at laboratory.

Sumner and I went to the laboratory at 10 A.M. and worked until 4 P.M. The day was very warm and the sun was shining brightly. We had a very successful day and made many discoveries.

MONDAY, APRIL 30, 1877.

Laboratory all day on copying experiment.
Edison came home at night and wanted
a model made for hand lamp and newspaper
wrapper printer. I and Kreus stayed all
night & we made them complete.

TUESDAY, MAY 1, 1877.

Laboratory all day on copying experiment.

122
WEDNESDAY, MAY 7, 1877.

45.
Went to New York
Took model of newspaper wrapper printer and
hand stamp blankets.
Went to Court (Quadruplex suit) Edison on the
stand all day
Stayed at office till 12 midnight - sitting English
pens.

123
THURSDAY, MAY 8, 1877.

46.
New York to-day
Advised Cant. in Quadruplex suit Edison
on stand

124
FRIDAY, MAY 4, 1877.

Went to
Laboratory all day working on new composition

125
SATURDAY, MAY 5, 1877.

Went to Newark to attend trial Gould & Allen
put off indefinitely 32 m
Out hunting in afternoon with Jim. Killed 2 snakes
1 small yellow & the other a black snake about
5 ft 6" long. Shot a bird and got a land turtle
which I put in garden.

SUNDAY, MAY 6, 1877.

Had a bump come on my face at the night
ride just below ear about one inch in diameter
except a hole.

MONDAY, MAY 7, 1877.

Worked all day on new composition in Laboratory

128
TUESDAY, MAY 8, 1877.

New York.

^{see notes}
Oliver & I went up to the Polygraph 89

Murray Street & saw the process of taking copies

129
WEDNESDAY, MAY 9, 1877.

New York

^{at}
At night Dr. Van Wagenen & 3 other gentlemen
came to Laboratory to see telephone. Wanted
us to show it before the scientific society in
Newark. made arrangements to Charley to show
it for them

30 THURSDAY, MAY 10, 1877.

Laboratory all day.
Left with Ford all afternoon.
David of Skitterburg here in afternoon.
Olson speaking to him about the
dammer waterproofing and varnish.
+ he agreed to go in 2 hrs half profit
+ Oleson Oulmual Np & + keep 1/2
profit himself.

31 FRIDAY, MAY 11, 1877.

Laboratory
Was working on varnish all day
Spent 1/2 hour and another gentleman
from Princeton here today to see
Telephone.

122
SATURDAY, MAY 12, 1877.

New York today
 Alf feeling bad, sick, & been cut up
 killed by Jackson w. Quadruplex Cal-
 pait; Edison Johnson. Alf & I were
 talking in Alf's room about the pay-
 ment of Mr. Edison's mortgage on Edison
 shop in July 1874. date July 31 (or about) 1874.
 Alf stated he paid it all or very nearly
 so. Edison thought not
 At night at laboratory we could not find
 anything paid on mortgage except two
 checks & receipts for about \$1000 or one
 part.

123
SUNDAY, MAY 13, 1877.

Went to Newark today
 Went to Murray to see if I could get any
 receipt or note of money paid to Cuyper
 on mortgage on Edison's shop. He has
 none but the \$10000 of money paid to the
 first \$10000

MONDAY, MAY 14, 1877.

Laboratory all day
Went over to Van Cleave place to make
arrangements about inst —

TUESDAY, MAY 15, 1877.

Went to New York
Met W. Kettle. Gave him all foreign
European letters and my answers to them
together with a short account of all
sales made by us.

126
WEDNESDAY, MAY 16, 1877.

Laboratory all day.
Edison went to see Ben Platt at night

127
THURSDAY, MAY 17, 1877.

Mr. James & Mr. Thompson here to day
Edison not here. Spent the afternoon
with Thompson talking on waterproofing paper
barrels

At 3 p.m. went to New York with him
Galdwell and I went to Bell's (my) first lecture
on the Telephone at Chickering Hall. I had an
opportunity to speak over the wire to New Brunswick
but could not get it well. I think it is no
better than our own
Gym. H. F. Field apparently got it very well but
I could not. The thing was not anything as
good as ours.

196
197
198
FRIDAY, MAY 18, 1877.

Mr. Pease Director of Telegraphs in England
& Mr. Ward Supt of British Cable here today
had a splendid time. They were highly
pleased and are coming again.
Pease very much interested in 'financial
relay' also in large timing forks for ap-
tizing lines. Mr. Ward brought us our
books of the Society of Telegraph Engineers.
Worked on speakers at night.

199
200
201
SATURDAY, MAY 19, 1877.

Went to New York stopping at Newmarket 48
New York coast road
Went to race lecture on telephone at night in
Chickering hall, 'it was very poor indeed.'
Brought back receipt.

SUNDAY, MAY 20, 1877.

Speaking telegraph all day.

MONDAY, MAY 21, 1877.

New York today

Saw "Amos" who wanted to advance
money to carry on the carbon experiments
but I told him we could not take it in
that way, if he put his money into the
Company, was the company advanced it
it would be all right.

Got two boxes milled at Jacob Hays for
Philadelphia.

TUESDAY, MAY 22, 1877.

Worked on talking telegraph all day.
 Got instruments ready for rehearsal of Concert
 at Newark.

WEDNESDAY, MAY 23, 1877.

Worked on New Speaker today. 32
 Went to Newark at night with Clara to
 the Newark Opera House to hear the Telephone
 the performance was about to be a fizzle but
 I and Jim forced it up.

THURSDAY, MAY 24, 1877.

Laboratory all day working on receiver
for speaking telegraph —

FRIDAY, MAY 25, 1877.

New York today stopped at Newark &
order box there for new instruments
for Telephone for Caldwell.
Got 6 large & 4 small pieces for Bally.

146
SATURDAY, MAY 26, 1877.

Went to New York.
Got press for Bally and collected for
Lans from Stock &c. 40 ~

147
SUNDAY, MAY 27, 1877.

Sent Mail 5 1/2 sh. (38 sh.)
Worked on Longing Telephone for Caldwell
exhibition -

MONDAY, MAY 28, 1877.

Worked on Singing Instruments for
Caldwell's Telephone Concerts—
Prof. Bawn came in afternoon and I
spent the afternoon with him on the
Spectroscopel ———

TUESDAY, MAY 29, 1877.

Worked all day on Caldwell's singing
telephonic instruments.
Caldwell here in morning.
Thompson of Newark here, wants
a box for domestic use that can
be put in a house & will notify
central office when anybody enters
from with windows or doors.
Worked all night

WEDNESDAY, MAY 30, 1877.

Finished ringing telephone
 Charlestown started for Reading with 4 women

THURSDAY, MAY 31, 1877.

Went to Newark with Rosa + baby to have her
 finger operated on by Dr. O'Homan
 afterwards to New York Met. Bros there

152
FRIDAY, JUNE 1, 1877

Home all day on Speaking Telegraph.
Heavy put in place of E. J. Gilliland
at 2d New Church to manage the
'Pen' business

153
SATURDAY, JUNE 2, 1877.

Went to New York
Brought home a Wheatstone transmitter of
which 2 and a puncher Edison got from H. V. S. Co.
E. J. Gilliland at Edison at Menlo Park

SUNDAY, JUNE 3, 1877.

Examined the speaking instrument large
Larynx, but found it of present a
failure -

MONDAY, JUNE 4, 1877.

Went to Newark with Rosa & baby to
get her fingers splinted by Dr
O'Gorman.
G. H. Bliss at laboratory at night
I made contract for his taking
xylorolling Lark and ribbon shuck
Lark.

TUESDAY, JUNE 5, 1877.

Worked on Speaking telegraph all day
J. P. Kieff at laboratory at night stayed
all night at Edison's —

WEDNESDAY, JUNE 6, 1877.

Worked on Speaker today. we now got
it so that we consider it fit to be put
on a line and shall now proceed to
make 2 instruments alike & try it
on a circuit —

THURSDAY, JUNE 7, 1877.

Worked on Speaking telegraph.

FRIDAY, JUNE 8, 1877.

Worked on Speaking telegraph.

162
SATURDAY, JUNE 9, 1877.

Worked on Speaking telegraph

161
SUNDAY, JUNE 10, 1877.

Worked on Speaking telegraph
Made relay for Copleston & reduced a circuit
through relay without opening it

MONDAY, JUNE 11, 1877.

Speaking telegraph all day

TUESDAY, JUNE 12, 1877.

*Speaking telegraph all day
C. F. Gifford here to see the condition of
factory for report to old man.*

164
WEDNESDAY, JUNE 13, 1877.

Speaking telegraph all day and night.

165
THURSDAY, JUNE 14, 1877.

Speaking telegraph all day and night.

FRIDAY, JUNE 15, 1877.

Speaking telegraph all day and night

SATURDAY, JUNE 16, 1877.

Worked on Speaking telegraph
 Prof. Barker here today.
 E. H. Johnson here today.
 Finished model speaker

166
SUNDAY, JUNE 17, 1877.

Worked on different plumbago for
speaking telegraph all night.
Found that the combination of
Plumbago and Rubber also Plumbago
and Gaultier Maggnesium are all excellent
as also many others.

167
MONDAY, JUNE 18, 1877.

Went to New York —
Coming back stopped in Newark and
saw Murray about the Centenary. They
will be ready for me soon —
Worked all night on Speaking telegraph.

176
TUESDAY, JUNE 19, 1877.

Worked in Laboratory all night on Speaking
telegraph

177
WEDNESDAY, JUNE 20, 1877.

Took the Speaker Luthrumment for private
line. & blumays & make four

92. m.

Went up to the Star gas machine. Office
& investigate Wells & Co machine —

THURSDAY, JUNE 21, 1877.

Went to Murray & Newall worked on designing the new speaking telegraph.

32

m

FRIDAY, JUNE 22, 1877.

Went to Murray & Newall 32 m.
 worked on designing new speaking telegraph.

174 SATURDAY, JUNE 23, 1877.

Went to Murray's at Newark 5.30 pm
Worked on designing new speaking telegraph.
Here

175 SUNDAY, JUNE 24, 1877.

Went in woods with Rose & children
Worked all night on talking telegraph

176 MONDAY, JUNE 28, 1877.

Wrote Pierce here today. went at 3 p.m.
worked all night on talking telegraph.

177 TUESDAY, JUNE 29, 1877.

Went to Murray at Newark. 32 -
worked on speaking telegraph all
night.

WEDNESDAY, JUNE 27, 1877.

Went to Murray's with Edison & Co.
 Worked on Speaking telegraph all night
 Went from here to New York and got
 the paper from Bennett
 -16-

THURSDAY, JUNE 28, 1877.

Went to Newark & Murray's with Edison
 32-
 Worked on Speaking telegraph all night

FRIDAY, JUNE 29, 1877.

Went to Murray's at Newark N. J.
 Worked at Speeding lithograph here as
 also at home at night
 Deposited 2 of Edmunds' Royalty Checks in
 bank & gave him checks here for
\$402.18.

SATURDAY, JUNE 30, 1877.

Stayed at home -
 Sent check to G. G. Ward, 16 Broad St
 for my annual subscription to Soc
 Ed. Eng. Indian

SUNDAY, JULY 1, 1877

Out in Woods with Rosa
Worked all night on Speaker Telegraph

MONDAY, JULY 2, 1877

Went to Newark Sunday to test Edison.
Got Edison there at 6 p.m. & tested all at 11 a.
Edison went home. —
Rosa in Newark with me —

TUESDAY, JULY 3, 1877.

Murray sent Boutwell to New York
 I and Odell went to New York in order to
 show two of them & place
 Get one working all right and it was seen
 by Prescott, Olin, Stager, Livingstone, Van Horn
 Hinchman, Hare, Fisher,
 Found out considerable bugs amongst which the
 Ammerton were wrong.

WEDNESDAY, JULY 4, 1877.

At home
 Mr. & Mrs. Baird and Agnes came & spent the
 week us

THURSDAY, JULY 6, 1877.

W & W + Aggie Band here today & went
home at night.
Went to see York & W O Scl e & ut-
worked on fixing embassers
Staid at night to make 2 Talking
telegraph machines as O'Brien is in a
hurry for them.

FRIDAY, JULY 6, 1877.

Went to Newark & got Carlings & ordered
Bass Hoses for 2 Speaking telegraph. 32-2

SATURDAY, JULY 7, 1877.

Worked all day on Cotton 2 Speaking
Telegraphs.

SUNDAY, JULY 8, 1877.

Worked all day on Cotton two Quakers.

MONDAY, JULY 9, 1877.

Went to New York
Called at Messrs. for Castings and nickel-
plating for Speaking telegraph.
Bought Lightning rod. for my house
but 24 large }
201 Small } sent to Henry

TUESDAY, JULY 10, 1877.

Finished drawings for Speaking telegraph
for Murray
Worked all night on Speaking tel.

WEDNESDAY, JULY 11, 1877.

Worked all day and night on speaking
telegraph

THURSDAY, JULY 12, 1877.

Worked all night on Speaker Tel.

FRIDAY, JULY 13, 1877.

Went to Newark to Murray's to see about
Speakers & take drawings.
Deposited check \$42.50 at bank payable J. H. Thomas.

SATURDAY, JULY 14, 1877.

Worked on Speakers all day.

126 SUNDAY, JULY 15, 1877.

Worked all day and night on Speaking
Telegraph

127 MONDAY, JULY 16, 1877.

Went to Murray's at Newark in the
afternoon
Worked all night on Speaking —

TUESDAY, JULY 17, 1877.

Worked all day and night on Speaking
 Edigraph, got speaking perfect
 by a device which would only an-
 swer to the 'L' 'H' & 'O' -

WEDNESDAY, JULY 18, 1877.

Worked all day on Speaker without
 getting tired at all

THURSDAY, JULY 19, 1877.

Worked all day on Speaking Telegraph
J.C. Kuff at Laboratory at night and
stayed at Odier's house at night

FRIDAY, JULY 20, 1877.

Worked all day and night on Speaking
Telegraph.

Sketch a new idea which promises
to be O.T. Speak into one tube &
at the same time across the tube of
another machine thus the diaphragm
on lower tube will only respond
to the s, sh, k, p etc and
the top one to the other sounds



The principle of the bottom
tube is like speaking across the mouth
of a bottle

20
SATURDAY, JULY 21, 1877.

Prof Barker, St. Traker, and
Mr Wallace here today & left on 3
p.m. train. Squaker telegraph
worked beautifully.

21
SUNDAY, JULY 22, 1877.

Worked all day and night on Squaker
telegraph.

207
MONDAY, JULY 23, 1877.

Worked all night on Speaking telegraph

208
TUESDAY, JULY 24, 1877.

Worked all day on Speaking telegraph

WEDNESDAY, JULY 25, 1877.

sent in bills 151.62 Lwt
 27.50 Message
 29.61 Lwt to Bliss.

Worked on Speaking telegraph all day and
 night

THURSDAY, JULY 26, 1877.

sent bill for 24.1 Lwt & Henry.
 Worked on Speaking telegraph today
 and designed receiving instrument for
 Price to show before the British Associa-
 tion.

208
FRIDAY, JULY 27, 1877.

Went to Newark + ordered boxes and got
casting for Preece telephone and after-
wards went to New York and bought
brass and steel for Biphthragms
Stopped at Newark coming back -

45 min.
Mr Ward Sept. Direct Cable at Laboratory
with Mr Siemens today

209
SATURDAY, JULY 28, 1877.

Worked all day on Telephone for Preece.

SUNDAY, JULY 29, 1877.

Worked all day and night on Shaker
telegraph.

MONDAY, JULY 30, 1877.

Worked all day and night on Shaker
telegraph. Got the articulation all
perfect again by covering silk fibre
with Plumbago and
polling into a lump and
placing between 2 diaphragms
with spring on and plating
disc on screw. This we found to deli-
cate that when you put this in circuit
with a galvanometer so:-
and felt pressure on spring
A so that it squeezes to the plumbago. You
can lessen the resistance as to run the
needle of galvanometer gently up and down
the scale.



12
TUESDAY, JULY 31, 1877.

Worked all night on Speaker telegraph

13
WEDNESDAY, AUGUST 1, 1877.

Worked on Speaker telegraph all
day and night

THURSDAY, AUGUST 2, 1877.

Went to Newark & shipped by
Austin Baldwin - the telephon
to H. H. Price.

FRIDAY, AUGUST 3, 1877.

Worked all day on Speaking
telegraph.
Sent \$750 bill by Char Odier to deposit
in bank it was not marked in
book as the bank held it

216
SATURDAY, AUGUST 4, 1877.

J. B. A. David new early the morning
to test the Telephone.

217
SUNDAY, AUGUST 5, 1877.

Worked all day on Speaker telegraph

MONDAY, AUGUST 8, 1877.

Worked all day on speaker telegraph.

TUESDAY, AUGUST 17, 1877.

Worked all day and night on speaking telegraph.

Got Place's machinery agency's man here today & took over machinery with a view to selling.

WEDNESDAY, AUGUST 8, 1877.

Worked all day on *Speaker Telegraph*

Mr Stewart of N. 24. St & 8 Ave New York
makes of Singer sewing machines
here & took at some machinery

THURSDAY, AUGUST 9, 1877.

Worked on *Speaking telegraph* all day
and night

Mr Dwyer here experimenting
He thought it better to abandon the
paper & consequently we receive it on
a magnet now.



I promised Edison I
would make him a
full set for tomorrow
to test his theory &
I started at 7 p.m. & worked all night

FRIDAY, AUGUST 10, 1877.

Worked up till noon finishing 2 sets of
Speaker telephones and Edison & I went
to New York, met David and we got a
line. Edison & David stopped at 197 Broadway
and I went to Charing House and we made
some ^{quick} talking. It took some time before
we had finish all right. At Camp House
got some messages from Edison & David
& answered. Called at 'pen office'
No sleep at all last night.

SATURDAY, AUGUST 11, 1877.

Worked on Speaker Telegraph.
Making different kinds of Graphograms.
Man here from Stewart. New York and
bought old Gould letter No 1 -

224
SUNDAY, AUGUST 12, 1877.

Made models for speaker's on handle
to take up and place to ear or mouth

225
MONDAY, AUGUST 13, 1877.

Went to Newark N.J.
Got casting for Spain speaker.
Ordered woodwork for same
Called in Mondays.

52-

TUESDAY, AUGUST 14, 1877.

Speaking telegraph all day

WEDNESDAY, AUGUST 15, 1877.

Speaking telegraph all day

226 THURSDAY, AUGUST 16, 1877

Went to New York and was gave testimony
before jury in indictments of
Frueman and Edison
Stewart and Edison on Electric
pen.
Went to Jacob Key and got wood work
for speaker.

227 FRIDAY, AUGUST 17, 1877

Worked all day on Speaking telegraph
Man came & put up gas machine

SATURDAY, AUGUST 18, 1877.

All day on Speaking telegraph
 Man started putting in gas mask

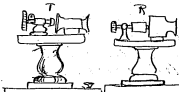
SUNDAY, AUGUST 19, 1877.

Worked all day on Speaking telegraph
 And all night
 Found out that by putting a piece
 of rubber on the diaphragm for
 receiving it dampened it and
 did away apparently with the
harmonies or rather sounds —

MONDAY, AUGUST 20, 1877.

Finished at 5 A.M. the first 2 pair of
speaking telegraphs and took them
to New York and showed
them to Mr. O'Brien.
Put them up between
Pierce's room 39 &
Mr. Savelli's room in
194 Broadway. They

worked a little weaker than at home.
Brought them home and worked all
night trying fluffs etc.
Now tied early this night



TUESDAY, AUGUST 21, 1877.

~~Took them~~ to New York to-day and tied
a little more on same circuit.
brought them home and worked all
night on trying new fluffs etc.

WEDNESDAY, AUGUST 22, 1877.

Took speakers over to New York again and put them on Durants line Sugar Creek between Pearl + all 4 & 25 that Jim went to & 25 St. & I to Pearl, I got him very good but there was so much noise at his end that it was impossible for him to get all I said. We left them there.

THURSDAY, AUGUST 23, 1877.

Altered speaker telegraph & worked all night. found good receiver was plain magnet on cylinder with piece of tin band on top so



FRIDAY, AUGUST 24, 1877.

from both wire receiver to new York & went to C 25th St & I went to Hall St. After considerable time I got him well but he could only get one occasionally. Brought all instruments home & Walter. Drew out plan at night for new transmitter & sender as



Receiver a magnet on sole handle with plate of tin on cores loose & prevented from falling off by small pins on edge of the shell. These are held loose by staples in edge of wood.

Transmitter made so that connections are made in machine proper and flexible cord passes through the handle, if you want to adjust take off shell & slip handle along cord. Gas started in Laboratory tonight

SATURDAY, AUGUST 25, 1877.

Started to make two transmitters & receiver on new plan.

Gas started in Robert Watson Jr from Montreal came down to see Edison about the introduction of speaking telegraph in Canada. Gas machine man and plumber pushed in Laboratory.

SUNDAY, AUGUST 26, 1877.

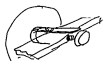
Went to Florida Grove with Rosa Aunt Sam
& kids, good time.

MONDAY, AUGUST 27, 1877.

Worked all day on speaking telegraph
new pattern.

256
TUESDAY, AUGUST 28, 1877.

Went to New York with Speakers.
tired them in 194 B.D.Way. brought them
back at night and put in new fluff box
that stands as much fluff as before



257
WEDNESDAY, AUGUST 29, 1877.

Fixed the Speakers all day.

92
THURSDAY, AUGUST 30, 1877

Went to New York and put on 2 Speakers
on between 194 Broadway and 110 East Street
Worked very well. I was at South Street and
Spoke with Orin, Schick, and many others
with Bell's instruments in we could get
nothing.

93
FRIDAY, AUGUST 31, 1877

Started on 2 new instruments with
flat handles for Quakong telegraph.

SATURDAY, SEPTEMBER 1, 1877.

Worked all day on New Speakers telegraph.
 Watson came this afternoon. went away
 at 6³⁰ pm.
 Went down to old man Gilleland's shop.
 & found 2 or 3 pieces glass broken & some
 pieces worth him suggesting putting
 up board.

SUNDAY, SEPTEMBER 2, 1877.

Finished new speaking instruments with
 flat handles, success.
 Tried experiment with Johnson at Saratoga
 from laboratory but he could get nothing
 on his microphone from either fluff or
 solid plumbago.



A Times reporter called
 at night to see the
 Speaking telegraph.

246
MONDAY, SEPTEMBER 3, 1877.

Went to New York adjusted instrument
at South Street put on new units &
found them work a little louder al-
though there is only 3 ohms in the
transmission.

Went to different Electrotypers etc to see if
we could find anybody that would
metallize our fibre but could not.

Worked at night trying metallization
of fibre.

Wrote for Michael tried speaking
telegraphs today

Went started on 6 pair of speakers.
telegraphs

247
TUESDAY, SEPTEMBER 4, 1877.

Worked all day on metallizing fibre
for speaking telegraph.

298
WEDNESDAY, SEPTEMBER 5, 1877.

Went to New York and put telephone
speakers on Sutton and Townsend
have stove men I went to their
yard at foot of 4th St East river
and had man from 9th Street go to
their office in Beaver Street.
Worked pretty well and left them
here.

J.C. Huff here to night

Mr Badger here this morning.

299
THURSDAY, SEPTEMBER 6, 1877.

Went to New York and sent Jim to
Beaver Street end of Sutton & T line
It was very wet but speaker worked
very well indeed left new instruments
at 4th Street and brought home the
speaker that has caused so trouble.
Made some phosphide of Calcium
at night and reduced the silver
on salt saturated by nitrate of
silver by placing it above the
Calcium phosphide which is damp-
ened. This reduces almost instant-
ly but it does not work well in
speaking telephone by reason of
fumes made by the nitric acid
(being left in the salt) when affected
by Battery current.

FRIDAY, SEPTEMBER 7, 1877.

Gen. B. Scott here today
 Worked all day here on Speaker
 telephone

SATURDAY, SEPTEMBER 8, 1877.

Worked all day on Bells for Speaking
 telegraph
 Adams went to New York and called
 to see telephone

SUNDAY, SEPTEMBER 9, 1877.

All day on Speaker & Belles for our
own Grand Telephone

MONDAY, SEPTEMBER 10, 1877.

Went to New York
Attended and gave evidence in
Hear interference with Edison on
Hart Stamp (but cracked pad on
Stentel sheet)
Dined on Speer, but he could not go
with us. Faking
Jen called and saw Speaker telephone
on Dalton #9 line

TUESDAY, SEPTEMBER 11, 1877.

Took a skimmer at Woodbridge for fishing
banks and got down to Sandy Hook
at 4 p.m. Very little wind.
Went ashore at the inside lighthouse
and walked across to the other.
Anchored for night in the bay
close to the steamship landing.
Jim and I rowed off to the Casino
and got Mr James of New York
party consisting of Edison Jim myself
and Geo Curran.

WEDNESDAY, SEPTEMBER 12, 1877.

Started out at 6 in the morning for
the banks (very little wind) got
there by 4 p.m. caught some
Sea bass and porge and anchored
for the night off Seabright.

THURSDAY, SEPTEMBER 13, 1877.

Fished a little this morning and
started home at 8 AM.
arriving at Perth Amboy at 6:30 p.m.
Bathed in ocean in 60 feet water
5 days.
Left Perth Amboy on Central Road
at 7:34 pm & Elizabeth & caught
8:25 pm from W. G. in Pennsylvania D.

FRIDAY, SEPTEMBER 14, 1877.

Went to Newark & deposited checks -
Sent Synthesis Life Ins. of New York check
for \$22.50
Haukilla H. Badger here all day
C. H. Johnson here all day.

258 SATURDAY, SEPTEMBER 15, 1877.

Worked on bells for Speaker telephone
Johnson left this morning
Gen. H. H. Bates here at night & left 9 PM
He said they had sold 150 machines
during the first four months on Foreign
Pen.
Edison gave Badger option 6 months on
Speaker telegraph for Canada & pay
complete for \$10000 gold

259 SUNDAY, SEPTEMBER 16, 1877.

260
MONDAY, SEPTEMBER 17, 1877.

Went to New York with telephone.
Fixed up Sutton and Townsend's line afterwards.
put a pair on Dutt Street line with call
bells etc. Stager, Gray. Other many other
wired out.
Oster gave Murray order for 100 sets at \$11-
of Edison Telephone
Gray & Bliss at laboratory at night went
away at 9 p.m. had supper at my house

261
TUESDAY, SEPTEMBER 18, 1877.

Went to Murray all day.
Bliss at laboratory at night & stayed at
Edison's house.
Talking over matters relative to Gen. &
Telephone till 2 A.M.
Edison said if Bliss & Holland would pay
patents in France Germany Austria
Belgium Italy he would give him 5% of
what he sold & 3% anyhow in only three
countries & same in any other country he
paid patents for
Bliss wanted 11 days to hear from Holland & get it

262
WEDNESDAY, SEPTEMBER 19, 1877.

New York today
Made out Domestic Tel Bill for Edwin

263
THURSDAY, SEPTEMBER 20, 1877.

Went to New York
Ries at laboratory at night and stopped
at Edison House.
I was in Munnays all afternoon.
Made sketches at night of Rotary press for
German patent
Letter from David saying telephone did not
work right.

264
FRIDAY, SEPTEMBER 21, 1877.

Went to New York & Newark.

265
SATURDAY, SEPTEMBER 22, 1877.

Went to New York.
Got letters for Mamma
Back Newark & called at Mamma's

206
SUNDAY, SEPTEMBER 23, 1877.

Worked all day and night on Speaking
telephone fluff.
Made running machine for fluff.
Made stamping press for fluff.

207
MONDAY, SEPTEMBER 24, 1877.

Worked all day & night on fluff.
Miss here tonight went to 9 P.M.
Made fluffholder with range.
Got talking through the ham-
miller.

TUESDAY, SEPTEMBER 26, 1877.

Mr Van Bunt & man here from
the Geo Place Machinery Agency.

WEDNESDAY, SEPTEMBER 26, 1877.

Went to New York
Dr Hays & Mr Field here from California
they saw the European patents for
the Bell Telephone & got 19 out of
them 45.

THURSDAY, SEPTEMBER 27, 1877.

Went to New York
Bought James' Battery for Telephone.

FRIDAY, SEPTEMBER 28, 1877.

Took over 4 Station of Speaking
telephone to Dr. Kelly of California
at Windsor Hotel New York
Put up James' Telephone at 7c Battery

221
2
SATURDAY, SEPTEMBER 29, 1877.

Delivered 2 Bells (one) to Dr. Hays on
Shamshir Butamine New York.
Worked on James' telephone at 12 Boway
till 8 o'clock. Here found there was some
trouble. Edison afterwards went
to Gold Street & found that the one
we last took would not work.
He came home & worked all night
& found that the mica diaphragm
was very sensitive to heat. Put in
brass one & also one made from a
linotype twice as thick.
Brass one articulation perfect. Iron one
not quite so good but more permanent
not being affected by heat like the
brass. The mica being worse by about
three than brass.

223
SUNDAY, SEPTEMBER 30, 1877.

Worked on speaking telephone.
Worked all night.
New principle speaking against diaphragm.
that had fluff between it & a spring.



MONDAY, OCTOBER 1, 1877.

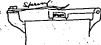
Worked all day on speaking telephone.
Also all

TUESDAY, OCTOBER 2, 1877.

Worked all day and night on speaking
telephone.
Made one to work by all the
parts being put in the diaphragm.
Went to New York and got James
+ 1 pair from Meyer.

WEDNESDAY, OCTOBER 3, 1877.

Went to New York and put telephone
on South Street and one each side
+ the other like this & the first
worked best



THURSDAY, OCTOBER 4, 1877.

Worked all day on speaking telegraph
plan from Dupuy of Providence & set about
giving out the

778
FRIDAY, OCTOBER 5, 1877

Worked all day on Speaking telegraph
tonight.
Shelled rubber behind mica diaph.
* dampen Take away handlens

779
SATURDAY, OCTOBER 6, 1877

Worked all day on Speaker +
at night

126
930
SUNDAY, OCTOBER 7, 1877.

Went to Patterson with Rosa & Emma

127
L21
MONDAY, OCTOBER 8, 1877.

Edison left for West to bring his
wife home
Andrew's man here I gave him
information he required.

TUESDAY, OCTOBER 9, 1877.

Went to Minnaps to make alterations on
maps

WEDNESDAY, OCTOBER 10, 1877.

Went to Minnaps. at Newark. and afterwards
to New York
Johnson came here at night and stayed
with me all night

THURSDAY, OCTOBER 11, 1877.

Worked all day on speaking telephone
Edison home at night
Johnson at Latro all day went to N.Y.
at night

FRIDAY, OCTOBER 12, 1877.

Went to New York + got Bell Station
Cable + casting for Western telephone
Johnson here all day slept at Edison

586
SATURDAY, OCTOBER 13, 1877.

Went to Murray's in morning to get
an '86 tape.
Afterwards worked on parts for telephones.
My bad cold in head went to bed early.

587
SUNDAY, OCTOBER 14, 1877.

Worked all day and night on
Speakers

MONDAY, OCTOBER 15, 1877.

Took Telephone to New York and
Riley and I got some good talking
over the Southwire.

TUESDAY, OCTOBER 16, 1877.

Went to New York with Rosa & kids.
Had their picture taken at Klor's.

WEDNESDAY, OCTOBER 17, 1877.

Took a pair of telephones to James
of Broadway and set them up for
him.

THURSDAY, OCTOBER 18, 1877.

Worked all day and night on speaking
telephones.

FRIDAY, OCTOBER 19, 1877

Worked all day and night on
Speaking telephones

SATURDAY, OCTOBER 20, 1877

Worked all day on Speaking
telephones

297
SUNDAY, OCTOBER 21, 1877.

Worked all day and night on speaking
telephone.

298
MONDAY, OCTOBER 22, 1877.

Worked all day and night on speaking
telephone.

Edison started out on solid plumbago
discs and combination of plumbago
& rubber.

I made a picture for filing & polishing
the discs exactly 16 thick.

Went to New York at night for Bora and
got materials for whitewashing houses.

296

TUESDAY, OCTOBER 23, 1877.

worked all day and night on speaking
telephones.

WEDNESDAY, OCTOBER 24, 1877.

Took over 2 telephones with slightly new
principles worked tolerably
well on South St circuit -

Hand-drawn diagram of a cockroach's head and thorax with labels: Compound eye, Brain, Heart, Gut, Malpighian tubules, Kidney, and Salivary gland.

Worked all night.

THURSDAY, OCTOBER 25, 1877.

Took over new telephone & put in circuit
between Milers and Rice. This room
and Milers, Stager, & others said it was
equal to Bell's.

FRIDAY, OCTOBER 26, 1877.

Worked all day on Speaking telephones
& late at night
Made 4 solid cylinders of lamp black
and rubber much more delicate than
Plumbago & rubber

SATURDAY, OCTOBER 27, 1877.

Speaking telephone all day.
Prof Barker & another gentleman at
laboratory at night.

SUNDAY, OCTOBER 28, 1877.

Worked on speaking telegraph
Bae & I went to woods in afternoon & got some
autumn leaves for her.

MONDAY, OCTOBER 29, 1877.

Went to Murays with Edman & Hume.
Had Murray make alterations on telephone.
Went to New York and got rubber, mica,
tube & sheet gum, Platina etc for adhesion.

TUESDAY, OCTOBER 30, 1877.

Went to Newark & deposit. Gilliland took
a bank for collection. afterwards sent
it myself.
Worked on machine for pressing lamp
black and rubber.

WEDNESDAY, OCTOBER 31, 1877.

Worked all day on machine for
pressing lamp black and rubber.

THURSDAY, NOVEMBER 1, 1877.

Worked all day on Speaking telegraph.

308
FRIDAY, NOVEMBER 2, 1877.

Worked all day on Speaking telegraph.

309
SATURDAY, NOVEMBER 3, 1877.

Worked all day on speaking telegraph.

90
SUNDAY, NOVEMBER 4, 1877.

Worked all day on speaking telegraph

91
MONDAY, NOVEMBER 5, 1877.

Worked all day on speaking telegraph

TUESDAY, NOVEMBER 6, 1877.

All day on telephone speaking
No night work—

WEDNESDAY, NOVEMBER 7, 1877.

Worked all day on Speaking telephone
Made



workd well

as



No night work

Also made water telephone
Diaphragm pressed and
closed a slot through which
two cells with electrodes
were connected together—

THURSDAY, NOVEMBER 8, 1877.

Worked all day on Speaking telephon
In night work.

FRIDAY, NOVEMBER 9, 1877.

Worked all day on Speaking telegraph.
Johnson here at night - No night work.

314 SATURDAY, NOVEMBER 10, 1877.

Worked all day on speaking telegraph

315 SUNDAY, NOVEMBER 11, 1877.

Worked all day on speaking telegraph

218
MONDAY, NOVEMBER 12, 1877.

Worked all day on speaking telegraph.

219
TUESDAY, NOVEMBER 13, 1877.

Worked all day on speaking telegraph.

WEDNESDAY, NOVEMBER 14, 1877.

Worked all day on speaking telegraph.

THURSDAY, NOVEMBER 15, 1877.

Worked on speaking telephone all day.
McKenzie came tonight.
Made telephone work. Knife edge on chisel.
struck a series of springs so that every
spring moved just in more resonance.

FRIDAY, NOVEMBER 16, 1877.

Worked on speaking telegraph all day.
McKenzie went away this morning after
testing on water telephone saying it
was far better than Bell's.
Mr James and Mr McKelvey of New York
here at night.

SATURDAY, NOVEMBER 17, 1877.

Worked on speaking telephone all day.
Sent 2 boxes apples to New York & myself.
McKenzie here tonight.

SUNDAY, NOVEMBER 18, 1877.

Speaking telegraph
McKenzie here all day brought 2 Bell
telephones & tested out one

MONDAY, NOVEMBER 19, 1877.

Went to New York with Rosa lunched
at Penna bakery.

TUESDAY, NOVEMBER 20, 1877.

All day on speaking telegraph—
Mr. Hunter came to New York to take charge
of Eastern Agency of pen.

WEDNESDAY, NOVEMBER 21, 1877.

All day on speaking telegraph.

THURSDAY, NOVEMBER 22, 1877.

All day on speaking telegraph
 Reef at bottom at night

FRIDAY, NOVEMBER 23, 1877.

All day on speaking telegraph
 W. King here at in evening

328 SATURDAY, NOVEMBER 24, 1877.

Went to New York. Shipped 2 Hk apples to mother.
Took models & specifications to house of
first water telephone and getting work
permanence in



Wm. H. P.
Stephen

329 SUNDAY, NOVEMBER 25, 1877.

Speaking telegraph all day.

MONDAY, NOVEMBER 26, 1877.

Speaking telegraph all day

TUESDAY, NOVEMBER 27, 1877.

Went to N.Y. with Edison to attend an
interference on Quadruplex between
Edison, Pape, & Nicholson. But Nicholson's
lawyer from Washington wanted a post-
ponement, which was granted.
Called on G. Place Machinery Agency
but in morning two hours before breakfast.

WEDNESDAY, NOVEMBER 28, 1877.

Worked in speaking telephone all day

THURSDAY, NOVEMBER 29, 1877.

Thanksgiving & wet all day
Worked in speaking telephone in afternoon

FRIDAY, NOVEMBER 30, 1877.

Worked on speaking telephone all day.

SATURDAY, DECEMBER 1, 1877.

All day on speaking telegraph.

SUNDAY, DECEMBER 2, 1877.

Worked all day on Speaking telegraph
Made induction coil for telephone

MONDAY, DECEMBER 3, 1877.

Worked all day on Speaking telephone
finished induction coil & tested it

TUESDAY, DECEMBER 4, 1877.

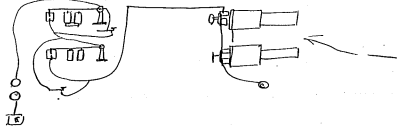
Wren made Phonograph today
worked on Speaking Tel

WEDNESDAY, DECEMBER 5, 1877.

Worked all day on Speaking Tel

THURSDAY, DECEMBER 6, 1877.

Finished the Phonograph
Made model for P.O.

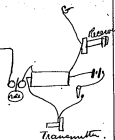


FRIDAY, DECEMBER 7, 1877.

Went to New York today
Tried telephone on 23rd St line
Worked much better than before

Took Phonograph to
Scientific American —

Took Model of 6-level



SATURDAY, DECEMBER 8, 1877.

Went to New York & took telephone

and it was not at all

the same as when I had

it before.

It was not at all

the same as when I had

it before.

It was not at all

the same as when I had

it before.

SUNDAY, DECEMBER 9, 1877.

Went out in woods in morning & got 2 Rabbits.

MONDAY, DECEMBER 10, 1877.

Went to New York, & tested telephone in Phelps shop.

TUESDAY, DECEMBER 11, 1877.

Started to make 6 transmitting telephones
of hard rubber.
Went hunting in morning shot rather.

316
WEDNESDAY, DECEMBER 12, 1877.

Worked all day on 6 Telephone Hammett.

Added much.

Finished at 10:30.

317
THURSDAY, DECEMBER 13, 1877.

Worked all day on 6 Telephone Hammett.
Hungarian No. — here tonight

↑
Pushes, Theodore (see page 360)

98 99
FRIDAY, DECEMBER 14, 1877.

Worked all day on telephone house.
Mr. Sand here in afternoon.

99
SATURDAY, DECEMBER 15, 1877.

316 3 369
SUNDAY, DECEMBER 16, 1877.

Count ^{friend} here drove here
from New York tandem.

Bliss came at night.
Worked all day in telephones (C)

MONDAY, DECEMBER 17, 1877.

Finished two telephone speakers
for Ford
J.H. Bliss here at night

TUESDAY, DECEMBER 18, 1877.

Telephone all day.

WEDNESDAY, DECEMBER 19, 1877.

Telephone all day.

THURSDAY, DECEMBER 20, 1877.

Telephone all day

FRIDAY, DECEMBER 21, 1877.

Telephone all day

366
SATURDAY, DECEMBER 22, 1877.

Worked on telephone all day.
Johnson & W. Roosevelt here to day.

367
SUNDAY, DECEMBER 23, 1877.

Worked on telephone all day.


MONDAY, DECEMBER 24, 1877.

Worked on telephone all day.

TUESDAY, DECEMBER 25, 1877.

Went hunting with Rumi & John Gode

360
360
WEDNESDAY, DECEMBER 26, 1877.

Worked on telephones all day.
Finished new receiver  with mouth.

Mr. Perkins here today got Phonograph
over telephone to New Brunswick

361
THURSDAY, DECEMBER 27, 1877.

Worked on telephones all day
Bliss here at night

Johnson, Painter & Gardner Hubbard here
today. _____ handed Cohen & first his
contract with N. V. Tel. Co.

36.2
36.2
FRIDAY, DECEMBER 28, 1877.

Worked on telephones all day.
Bliss here this morning.

36.3
SATURDAY, DECEMBER 29, 1877.

Speaking telephon all day.
Johnson & Painter here today.

SUNDAY, DECEMBER 30, 1877.

Speaking telephone all day

MONDAY, DECEMBER 31, 1877.

Speaking telephone all day
Wrote the phonograph & showed to John

Charles Batchelor Journal, Cat. 1343

This journal covers the period January 1-December 22, 1883 and contains entries by Batchelor about his business and personal affairs, including his activities as Edison's personal representative in Paris. There are also clippings in English and French, among them a letter from Sherburne B. Eaton to the New York World about the Brush-Swan Electric Light Co. and a circular by the United Telephone Company regarding the infringement of Edison's telephone patents in the United Kingdom. Among the individuals and companies mentioned are Guiseppi Colombo, Edward H. Johnson, the Compagnie Continentale Edison, the Societe Electrique Edison, and the Societe Industrielle et Commerciale Edison. The book contains 185 pages numbered by an archivist. The front cover is stamped "Agenda 1883."

Blank pages not filmed: 31-32, 63-70, 73-74, 93-94, 121-122, 149-152, 155-156, 165-170, 175-178, 181-185.

JANVIER

3. MERCREDI. Sainte Geneviève.

3-363

Paris

4. JEUDI. Saint Rigobert.

4-362

Paris*Bailey left for Berlin on
German Contract*

JANVIER

5. VENDREDI. Sainte Emilienne.

5-361

Paris*Propr. L'Grand Huis and
at Factory*

6. SAMEDI. Epiphanie.

6-360

Paris

JANVIER

7. DIMANCHE. Saint Théodore.

7—859

Paris

8. LUNDI. Saint Lucien.

8—358

Paris

JANVIER

9. MARDI. Saint Julien, (N. L.)

9—357

Paris*Lgt for Berlin with M. Page
8 p.m.*

10. MERCREDI. Saint Paul, ormito.

10—356

Berlin*Arrived 9 p.m. at Berlin.
Hannover Hotel.*

7.

11-355

Berlin

Meeting at Landau. in Norway
" " Seimen " P.M. with
H. Lentz and Volger.

12-354

Berlin

9

13—353

Berlin

Visited Academy installation
in Bismarck "
" place for station for lighting
two theatres —

Dined with M. Ruge at M. Fredenbergs.

Saw Ward during day - he went
with me to the installations
Saw Von Hejner Altnneck -

14-852

Berlin

left at 9. pm for Paris.

JANVIER

15. LUNDI. Saint Maur.

15-351

Mrs

arrived at 8 p.m. in Paris

16. MARDI. Saint Guillaume. (P. Q.). 16-351

Mrs

JANVIER

17. MERCREDI. Saint Antoine.

17-349

Mrs

18. JEUDI. Chaire de S. Pierre.

18-348

MrsInterview with Han and Philippe
relation to lighting Opera

JANVIER

19. VENDREDI. Saint Sulpice.

19-347

Mrs

At Fabrique commenced to keep man in
 Pump room to find out what is cause of
 such breakage in pumps there -
 Breakage in column at the point about 26 ft.
 Probable cause -
 1. too heavy cast in mouth of jet -
 2. Chemical inside due to capillary attraction
 in packing bath
 3. too much weight on carburettor

20. SAMEDI. Saint Sébastien.

20-346

Mrs

Got some oil in Mercury pump at factory
 and got to take down all pipes

JANVIER

21. DIM. Sainte Agnès. Septuagésime. 21-345

Mrs

22. LUNDI. Saint Vincent.

22-344

Mrs

Accident at Factory Little station boy fell
 that light the shop at factory near the dynamo
 Mould for carbons. — like this made
 and commenced
 to make them on till — Regular 16 carbons
 carbon taken

JANVIER

Paris

23. MARDI, Saint Ildefonso. (P. L.). 23-343

24. MERCREDI, Saint Babylos. 24-342

JANVIER

25. JEUDI, Convers. do S. Paul. 25-341

26. VENDREDI, Sainio Paulo. 26-340

Paris

*At Congress Continental unanimously agreed
Have had most a good business chat talking
At Opua at Paris*

JANVIER

27. SAMEDI. Sainte Angélique. 27-339

Paris.

Concert at Box Masche. Our eyes
and go. jett together very good

28. DIM. Saint Charlemagne. Seangés. 28-338

Paris

JANVIER

29. LUNDI. S. François de Sales. 29-337

Paris

Meeting of Council of Loire Industrielle
Today. 11 p.m. Authority given to open
the new plant. No go. closed
Next and Botcher. Swetten for evening of car.

Post of Postal Chamber Commence at Hotel Catherine
Tel at night

30. MARDI. Sainte Savine. 30-338

Paris

Japanese minister at fabrique (very)

FÉVRIER

4. DIM. Saint Gilbert. Quinquagésime. 36—331

5. LUNDI. Sainte Agathe. 36—330

FÉVRIER

6. MARDI. S. Amand, év. Mardi-Gras. 37—339

Mrs

Received Founders share. Société Electrique
 3000 from Banque Centrale
 " " " Société Industrielle
 3000 from Banque Centrale
 Delivered 500 Electrique to Léon -
 " 750 Industrielle & Léon -

7. MERCRI. S. Romuald. Cendres. (N.L.). 38—328

Mrs

Just Recd. Ind and Société Electrique's
 founders share by Wells Fargo & Co.
 & Major Saml. Weyman. Repairs
 back have to be given to Richard Haddy

FE

Paris

8. JEUDI. Saint Jean.

*Revue of American
Press Co at Fair*

Le grand succès de la démonstration électrique Edison à l'Exposition universelle de 1889 a été le point de départ d'une série d'installations électriques à l'Exposition de 1893. A l'Exposition de 1893, Edison a été le plus grand succès. A l'Exposition de 1893, Edison a été le plus grand succès. A l'Exposition de 1893, Edison a été le plus grand succès.

Edison à la cour d'Autriche.
Une dépêche de Vienne annonce qu'un bal de la cour a eu lieu le mardi gras et que, comme au bal précédent, la grande salle de la Burg était éclairée au moyen de 500 lampes Edison. Les reflets de la lumière électrique dans les cristaux des lustres produisaient un effet magique. Leurs Majestés étaient enchantées et ont hautement récompensé toute leur satisfaction.
Figaro. 8 Feb. 1893

Paris

9. VENDREDI. Sainte Apolline.

40—326

FÉVRIER

Paris

10. SAMEDI. Sainte Scholastique. 41—325

Paris

11. DIM. Saint Séverin. Quadragesime. 42—324

FÉ

Paris

8. JEUDI. Saint Jean, martyr.

39—327

*Circle of America
Bran & al Fabrique*

Edison à la cour d'Autriche.

Une dépêche de Vienne annonce qu'un bal de la cour a eu lieu le mardi-gros et que, comme au bal précédent, la grande salle de la Burg était éclairée au moyen de 500 lampes Edison. Les reflets de la lumière électrique dans les cristaux des lustres produisaient un effet magique.

Leurs Majestés étaient enchantées et ont hautement témoigné toute leur satisfaction.

Figure: 8 Feb. 1883

Paris

9. VENDREDI. Sainte Apolline.

40—326

FÉVRIER

Paris

10. SAMEDI. Sainte Scholastique.

41—325

Paris

11. DIM. Saint Séverin, Quadragésime. 42—324

FÉVRIER

12. LUNDI. Sainte Eulalie.

43-328

13. MARDI. Saint Léon.

44-322

FÉVRIER

14. MERC. S. Valentin. Q. T. (P. Q.). 45-324

Hawville

New Looffle installation

15. JEUDI. Sainte Georgina.

46-320

Receives

*Left Parcelat for Porome - 6:55 am.
near morning -*

FÉVRIER

20. MARDI. Saint Eucher.

51-315

21. MERCREDI. Saint Félix.

52-314

FÉVRIER

22. JEUDI. Sainte Isabelle. (P. L.)

53-313

23. VENDREDI. Saint Milburgo.

54-312

Paris Secretary of Continental Council of Nations.

FÉVRIER

Paris

24. SAMEDI. S. Mathias.

35-311

Commenced to make new brickholder
301-Paris

25. DIMANCHE. Saint Victor, Oculif.

36-310

FÉVRIER

Paris

26. LUNDI. Saint Nestor.

37-300

*Left for Berlin 8 p.m.*Berlin

27. MARDI. Sainte Honorine.

38-308

MARS

4. DIMANCHE. Saint Casimir. Letaro. 63—303

Bertin

5. LUNDI. S. Adrien.

64—302

MARS

6. MARDI. Sainte Colette.

65—301

*Mis**Arrest Paris 7 h m.**Mis*

7. MERCREDI. S. Thomas d'Aquin. 66—300

*rent with Capt. J. K**Office
Fabrigue
Chas. Porgos.**Biden Theatre at night*

MARS

8. JEUDI. Saint Jean D.

67-299

*Brimelle.**Arrived noon + went
Theatre du Parc L'Establissement*

9. VENDREDI. Ste Francoise. (N.L.)

68-298

*London**Arrived London 10 p.m.*

MARS

10. SAMEDI. Saint Blanchard.

69-297

*London**See. Hobson Station installation
Hobson Restaurant
" " Restaurant installation
Aquarium installation
Savoy Theatre.*

11. DIMANCHE. S. Firmin. Passion. 70-296

London

MARS

12. LUNDI. S. Grégoire.

71—295

Londou

Saw Hophinson
W. F. Bramwell
Garnett etc.

*Hophinson gave to each taken on board in
 Europe for distribution by 5 min.*

"Les lampes Edison dont il est fréquemment question depuis qu'on en a fait installation à la chambre des représentants, au théâtre du Parc et ailleurs, vont peut-être prochainement attirer l'attention du public à un tout autre point de vue que celui de l'éclairage.

Il est possible, en effet, qu'une revendication surgit en faveur de la Belgique. *Charles Bette*, *des États-Unis*, qui se targuait d'inventeur, venant d'être démasqué en Europe l'annonce des découvertes électriques d'Edison et invention de sa lampe à fil de platine, irrite et blesse tout au plus pour de l'Amérique de l'Atlantique, lui communique par câble en Europe sa découverte de mai 1879 une étonnante professe. Elle tombe cependant devant un accomplissement indéniable d'Europe, un homme d'avant il lui expose que cette invention n'est pas plus que ses découvertes.

Le 11 novembre Edison prit un brevet d'invention mentionnant pour la première fois l'emploi d'un filament de charbon pour produire l'incandescence d'un globe clos. Or, selon jours avant lui, M. Comate avait déposé un brevet pour une lampe à incandescence de la même et reconnaissait « l'emploi d'un filament de charbon très pur et dense, et un courant recouvert en forme de fil de charbon avec section moindre à l'extrémité aux jonctions. »

Ces dispositions de la Comate sont précisément celles qui ont été l'objet d'un brevet postérieur d'Edison, mais avec cette différence que ce dernier ne forme à mentionner un fil ou une plaque de charbon recouvert, tandis que l'inventeur belge spécifie la forme même du fil et d'un perfectionnement qui les charbons des lampes Edison. L'insuccès de la Comate n'est pas une reconnaissance aux États-Unis, mais que la 10 décembre suivant il prit un brevet de perfectionnement dans des conditions sans ambiguës.

Il ne viendra à personne l'idée de mettre en doute la priorité des actes qui se passent aux États-Unis simultanément avec ceux qui se produisent en Belgique même, étant donné la priorité du brevet d'Edison belge, on est forcé de reconnaître que la lampe attribuée à Edison est une invention absolument telle et qu'elle doit porter le nom de Somme, son véritable inventeur.

Paris

12

9

MARS

14. MERCREDI. 47 Martyrs,

73—293

Paris

*Ammoniac treated a 2 degrees
 with shot iron - some mass of metal
 hel 8" instead of 6 1/2" diameter etc.*

Paris

15. JEUDI. Saint Zacharie. (P. Q.) 74—292

Rece 4 Vienna et Fabrique

MARS

12. LUNDI S. Grégoire.

71—295

*London**Saw Hobkiss**at 5 P.M.*

13. MARDI Sainte Euphrasie.

72—294

*Paris**Arrived 6 A.M. Paris**Remain on board till agreed*

MARS

14. MERCREDI. 47 Martyrs.

73—293

*Paris**Arrived Trieste at 2 P.M.
with shot cover - some miles of shore
but 8" instead of 6" diameter.*

15. JEUDI. Saint Zacharie. (P. Q.)

74—292

*Paris**Was at Vienna at Fabrique*

MARS

Paris.

16. VENDREDI. Saint Cyriaque. 75-291

Paris

17. SAMEDI. Sainte Gertrude 76-290

MARS

Paris.

18. DIM. Saint Alexandre. RAMEAUX. 77-289

Paris

19. LUNDI. S. Joseph. 78-288

Kau, M. Ros. & Savonny went behind
 scenes at Opera & Eden Theatre & wrote
 gas manufacturing: -

MARS

20. MARDI. Saint Joachim.

79—287

21. MERCREDI. Saint Benoît.

80—286

MARS

22. JEUDI. Sainte Epaphrodite.

81—285

*Mars**Mars*

23. Vendredi-Saint: S. Victorien. (P.L.). 82—284

*Rue, S. St. Vict. & St. Denis à
Bijoux après-midi. Menu. Guey.*

MARS

24. SAMEDI: Saint Siméon.

89-288

Miri

Ext. J., Mr. Ext. J., has left
Rosa + 9. Went at 8:30
7 afterwards went to Paris.

25. DIM. PAQUES. ANNONCIATION.

89-282

MARS

26. LUNDI S. Ludger.

86-281

Miri

Thora + wife. Ext. Mr. Ext. Mr. C.
her 3, myself, 1 child.

|| The Panama canal scheme of M. de Lesseps is no longer a visionary undertaking. The projector himself and his strongest American supporter, Mr. Nathan Appleton, of Boston, have been supervising the work in person, and report the prospects as very encouraging, although several troublesome breaks have occurred. In addition to the native labor many good workmen have been brought to the isthmus, and the best kinds of modern machinery for dredging is being shipped. Much of the distrust in the enterprise, which has been felt, especially by the people of Isthmian Telegraph, has been removed.

A. MICHOUX, 1860. The meeting at Liverpool for the meeting of the canal is being of Lockport, New York.

Y. The canal is being of Lockport, New York.

Miri

86-280

h.c.p. barrel
at during time
to 20 candles
it and it began
at the end of the
candles, and it
being 8:30 h.p.

MARS

24. SAMEDI: Saint Siméon.

83-283

Mrs.

Oct 7, w/ Oct 7, has coll.
Rosa + D. dined at Begun
7 afterwards went to Paries.

25. DIM. PAQUES, ANNONCIATION.

84-285

MARS

26. LUNDI, S. Ludger

854-281

Jan.

Opera at night Ccty. W. Ccty. N. Y. Col
Mar 13, myself, 3 children

THE Panama canal scheme of M. de Lesseps is no longer a visionary undertaking. The projector himself and his strongest American supporter, Mr. Nathan Appleton, of Boston, have been supervising the work in person. They report the prospects as very encouraging, although several troublesome breaks have occurred. In addition to the naive labor many good workmen have been brought to the isthmus, and the best kinds of modern machinery for dredging is being shipped. Much of the distrust in the enterprise which has been felt, especially by the people of the isthmus, is said to have been dispelled by the vigor with which the work is being pushed. The contract for dredging and constructing seven miles of the canal is being undertaken by Mr. L. Austin Spaulding, of Lockport, New York, for a consideration of \$6,000,000, or 98c per mile.

Stockholder Mch 27 1893

27. MARDI. Saint Rupert.

86-280

Ann

Made 17 trips ordinary 6 c.p. bamboo
without passing barrel during time
on pump. Put one to 20 candles
after finishing at 11 A.M. and it began
to diminish slowly after one hour, left
it at 20 candles by Montezuma and it
broke at 4.30 p.m. being 5.30 left.

A CARD.
Owing to the late arrival
of our Sovereign, intended
for our opening, which will
be one of the most elegant
and unique ever given in
the city.
OUR MILLINERY OPEN.
We will, therefore, not

MILLINERY GOODS.
 T. M. NEWARK, 220 7th av. Send for catalogue.
 The Great Carpet Cleaner.
 O. REMOVED DIRT FROM THE PAINT AND
 PHILADELPHIA HAIR RESTORER.
 101 N. 3rd St. No. 1000, CORNER 10th and 11th Sts.

MARS

Paris

28. MERCREDI. Saint Gontran.

87-279

29. JEUDI. Saint Frisque.

88-278

MARS

Paris

30. VENDREDI. Saint Pastours.

89-277

<i>Papier on Stock:-</i>	<i>Added</i>	<i>42</i>
E. B. L. Co.	\$200	550
E. Co. for J. L.	170	125
E. J. Co. & H.	50	60
E. B. L. of B. L. Co.	42 1/2	—

31. SAMEDI. Sainte Balbino. (D. Q.). 90-276

Havre

*Went Havre with Steamship & see the
Electric Light on the 'Normandie' at the
sundament put in by Bureau of London*

<i>Stocks:-</i>		
Edison Electric Light Co. 137 1/2 asked	325	312
" Co for Electric Light 155 "	125	"
" Illuminating Co. N.Y. 80 "	60	"
" Best Light of Europe (Lund) 42.50 "	30	"

AVRIL

1. DIM. Sainte Valérie. Quasimodo. 91-275

Paris

2. LUNDI. S. François de Paul. 92-274

Paris

AVRIL

3. MARDI. Saint Richard. 93-273

*Paris
Sijon**Left Paris for Sijon to sign lease of house
for Central Station*

4. MERCREDI. Saint Ambroise. 94-272

*Sijon**Spent day with Brancin de Lunan
Super. + variety in measuring
+ making out on station*94-1 Habitants 56,000*Price de gaz 25¢**Water 50¢ per an 1 cm. per jour**Coal Best 25¢ per ton**Good 18 " " } Delivered*

La femme qui a été pendue, avait la tampa, une colicorde presque européenne, le fiancé Simon Philippart, arrêté mardi, à son domicile, à Avenue de l'Opéra.

C'est sur la demande des Paroisses de Bruxelles que cette arrestation a été opérée. Depuis les affaires belges de 1870, M. Philippart n'avait guère l'aspect de lui, il avait toujours porté d'antennes dans-elles, mais à l'étranger: en Belgique, au Palais de Namur, où il avait acquis des lo-ches, et en Angleterre, où il avait constitué une Société d'Electricité, en Belgique enfin, où il avait la responsabilité de plusieurs affaires en filage.

M. Philippart est parvenu à l'attention à la fois par les Sociétés, et il est inculpé, en outre, de falsification d'actes.

Mardi-matin, à dix heures, M. Koehn, commissaire de police du quartier Saint-Germain-Auxerrois, reçoit l'ordre d'aller arrêter Philippart, qui doit être pour aller visiter ses

ateliers, 5 et 7, rue des Tanneuses-Industrielles, faubourg Saint-Antoine. A son retour, vers onze heures, M. Koehn qui l'aurait attendu, lui si étonné par sa mission.

Ce fut comme une course de loup pour le banquier qui espérait avoir au moins vingt-cinq heures d'avance sur la justice, car, averti de ce qu'il manquait, doit être prêt et le soir même M. Philippart passait la Manche.

A midi, le prisonnier montrait dans un coupé avec le commissaire de police, et était amené au Palais-de-Justice, au bureau de M. Koehn.

Sur sa demande, il a été décidé de lui être conduit au Dépôt, où il a été tenu à deux heures dans la cellule 17.

Une demande d'extradition a été adressée par le gouvernement belge au gouvernement français. M. Dite, ambassadeur du procureur de la République, est chargé de cette affaire.

Les formalités à remplir pour cette extradition seront très courtes, et dans quarante-huit heures M. Philippart sera probablement quitte les prisons de Paris pour celles de Bruxelles.

Theatre about 800 lights
Dining room 30
1 hall 16
" " 20
" " 24
" " 144
Ramp 80
10 balcon 5
340
Orchestra
Lobby
Dressings
Foyer
Box and Gall.
Side
Balcon
Orchestra etc

340
135
40
60
60
60
20
40
450

AVRIL

7. SAMEDI. Saint Clotaire. (N. L.) 97-269

Theatre

Theatre

It makes 218 representations of 6 hours each in a year.
On stage they show red, white and blue, but the whole lamps are included in the number

Depot measured off this for taking etc etc

8. DIMANCHE. Saint Edouard. 98-268

Theatre

AVRIL

9. LUNDI. Saint Eudes.

99—267

Paris

Thais.

10. MARDI, Saint Fulbert.

100-266

AVRIL

11. MERCREDI. Saint Léon.

101—265

Paris

Paris.

12. JÉUDI. Saint Jules.

102-264

AVRIL

Mis.

13. VENDREDI. Saint Justin.

109—263

Mis.

14. SAMEDI. Saint Tiburce. (P. Q.). 104—262

AVRIL

Mis.

15. DIMANCHE. Saint Paterno.

Ante annu. —

105—261

Mis.

16. LUNDI. S. Lambert.

106—260

AVRIL

Paris

17. MARDI. Saint Anicet.

107-259

Paris

18. MERCREDI. Saint Parfait.

108-258

AVRIL

19. JEUDI. Saint Timon.

109-257

Paris
London

Left Paris with No. 217, for London arriving 10.50 pm

London
Liverpool

20. VENDREDI. Saint Marcolin.

110-256

Great day with C.H. in London
Introduced to Col. French.

AVRIL

Shipal.
Bound for
Newport.

21. SAMEDI. Saint Anselme. 111—255
Left Newport on S.S. Savio for New York.
Lou, Marie, + Harriet saw me off

at Sea

22. DIM. Saint Théodore. (P. L.). 113—254
Spent winter at Quenstown at
Mist W. Williams (of Staley) on board —
Met W. Pidgeon

AVRIL

at Sea

23. LUNDI. Saint Georges. 113—253

at Sea

24. MARDI. Saint Léger. 114—252

AVRIL

25. MERCREDI. Saint Marc. 115—251

26. JEUDI. Sainto Espérance. 116—250

AVRIL

27. VENDREDI. Saint Anastase. 117—249

28. SAMEDI. Saint Vital. 118—248

*Two more very fine water sprays of passed on the
edge of one.*

AVRIL

29. DIMANCHE. Saint Robert.

119—247

New York.

30. LUNDI. Ste Eutrope. Regat. (D.Q.), 120—246
 Arrived in Bay at 2 a.m.
 Landed at dock midday.
 Ruled Central Station at night
 with Edison.

MAI

1. MARDI. S. Phil. et S. Jacques. 121—245

Newark. Lamp factory at East Newark.

New York.

2. MERCREDI. Saint Anasthase. 122—244

THE
 UNITED TELEPHONE COMPANY (LIMITED),
 AND THE
 LONG-DISTANCE TELEPHONE COMPANY (Limited).

The Directors of the UNITED TELEPHONE COMPANY (Limited), Herby Give Notice that they have been advised that the HOPKINS' TELEPHONE is an INFRINGEMENT of the PATENTS granted in 1875 and 1877 for the well-known EDISON TRANSMITTER and BELL MAGNETO RECEIVER, owned by the UNITED TELEPHONE COMPANY (Limited). PROCEEDINGS will be TAKEN against any PERSON MANUFACTURING, SUPPLYING, or USING the HOPKINS' TELEPHONE in ANY PART of the UNITED KINGDOM.

By order of the Board,
 Dated this 2nd day of May, 1883.

JAMES BRAND, Chairman.

MAI

19 SAMEDI Saint Yves.

139—227

Headed
to
Sea

Left New York in Roman of Bremen
Line for Southampton

Saw Edison new meter work today
perfectly

Edison & I worked a little with his small
motor so that Regman could not
diminish it speed by hand turning

At
Sea

20. DIM. THURSDAY S. Bernard.

140—226

MAI

21. LUNDI. Saint Hospice.

141—225

At
Sea

At
Sea

22. MARDI. Saint Emile. (P. L.).

142—224

MAI

27. DIMANCHE. Saint Hildevert. 147—149

28. LUNDI. S. Germain. 148—218

MAI

29. MARDI. Saint Maximin. (D. Q.) 149—217

*Went to the ...
... ..*

30. MERCREDI. Saint Félix. 150—216

*Southampton
London Arrived at Southampton 3 AM
Left for London at 6:50
Met Johnson & Bailey*

MAI

London

31. JEUDI. O. F. - D. S' Pétronille. 151-215
 Met Bailey and Johnson all day; left
 met Bailey at night for Paris

JUIN

Paris

1. VENDREDI. Saint Pamphile. 152-214
 Arrived 6 A.M.

JUIN

Paris

2. SAMEDI. Saint Potin. 153-213

Paris

3. DIMANCHE. Sainte Clotilde. 154-212

Went to the Grand Prix
 Party consisted of myself, Max,
 Mr & M. Johnson and Miss Cole

JUN

4. LUNDI Saint Quirin.

155-211

Paris

5. MARDI Saint Bonifacio. (N. L.) 156-210

Paris

JUN

6. MERCREDI Saint Claude.

157-209

~~London~~~~Paris~~Paris~~Arrived at 2 pm left for London at 6 pm
next morning in July~~

7. JEUDI Saint Havenne.

158-208

~~London~~Paris~~Left sailing for London at 10 am
and left sailing for Paris at
night~~

JUN

8. VENDREDI. S. Médard. 159-207

Paris -

~~Ammond~~ ~~Le Roy~~
 Interview with ~~Le Roy~~ at his house
 at night

Hippel quite sick inflammation of
 bowels.

9. SAMEDI. Sainte Pélagie. 160-208

Paris -

Called Byer give more time
 to Ammougand & prepare file -

Rec'd Cass 62 and 63 7 sent to Ammougand
 62. New letters - Patent
 63. Distribution - Addition

Made devis for Bon Marche 2000 light
 " " " 5000 "
 " " " 5000 7 outside
 5000 the outside 5000 having 3, 4 & 5
 hour average - He showed a
 supplementary dividend of 5% of
 3 hour. 2 1/2 %
 4 " 3 1/2 %
 5 " 3 9/16 %

JUN

10. DIMANCHE. Saint Landri. 161-206

Paris -

~~Hopkinson~~ ~~Patent~~ - ~~Ward~~ ~~Bailey~~ in
 London an opinion on these -

Commenced working on Serifor
 Central Station from Rue Bô des
 Rampart.

11. LUNDI. Saint Barnabé. 162-204

Called on Byer give more time
 to Ammougand & prepare file -

JUN

12. MARDI. Sainte Olympe. (P. Q.). 163—203

Paris

13. MERCREDI. S. Antoine de Padoue. 64—202

Went to see Forest Engine - *Donbass*
 2870 hrs - *Exceedingly heavy but*
good disposition being upright -
has workmanship

JUN

14. JEUDI. Saint Rufin.

165—201

Paris

Count on Moncel + wife at usine

Rec'd check 7/6/16 no administrative
of Societe Industrielle et Commerciale
Bohem

15. VENDREDI. S. Modeste.

166—200

JUN

16. SAMEDI. Saint Fargeau. 167-168

Mrs.*Meadows here only 6 steps on day*

17. DIMANCHE. Saint Avit. 168-169

Mrs.*Johnsons' family all dinner at the
Café Lefroy*

JUN

18. LUNDI. Sainte Marine. 169-197

Mrs.*Johnson, P. & Co. Goddard
breakfasted together**All at M^r Cumi's home at night**Attended annual meeting of Conf. Com.
Tale Gervais, Societe Catholique, &
Societe Industrielle & Commerciale Gervais*

19. MARDI. S. Gervais, S. Protais. 170-196

JUN

20. MERCREDI. Saint-Hilvére. (P.L.) 171—195

Paris

24. JEUDI. Saint Loufroi.

172—194

Paris

JUN

22. VENDREDI. Saint Paulie.

173—193

Paris

23. SAMEDI. Saint Andri.

174—192

*Paris**Col. Goddard at factory -*

JUN

24. DIMANCHE, Nativ. de S. J. Bapt. 175-191

Paris

Made lamps to show in *Lyon* v.
Edison pass in *London*.Paris
London

25. LUNDI, Saint Prosper. 176-190

Left here for *London* to have consulta-
tion with *Wintebottom* on *Edison*
v. *Lyon*.Weybridge
London.

JUN

26. MARDI, Saint Sauve.

177-189

London
WeybridgeArrived 6 A.M.
Interview with *Waterhouse* *Wintebottom*Selected some of the lamps in 57 Holborn
Road and worked well

Dined at Verity's at Weybridge

27. MERCREDI, S. Croissant (D.Q.). 178-188

Met *Hopkinson* at dinner
Left for *Paris* 8.8 at night

JUIN

28. JEUDI. Saint Irénée.

179—187

Paris

Arrived 6 A.M.

Paris

29. VENDREDI. S. Pierre, S. Paul. 180—186

Nothing new Engine all day. at 1000

JUIN

30. SAMEDI. Conv. de S. Paul.

181—185.

Paris

JUILLET

1. DIMANCHE. Sainte Eléonore.

182—184

JUILLET

Paris

6. VENDREDI. Saint Tranquille. 187-179

Meeting of Soc held at Com. today

7. SAMEDI. S. Aubierge. 188-178

JUILLET

Paris

8. DIMANCHE. Saint Procope. 189-177

Le Surveys by boat

Paris

9. LUNDI. Saint Cyrille. 190-176

Meeting with Porras at the office
Kathman at Fabrique all
afternoon & dined with me at
night

JUILLET

10. MARDI Sainte Félicité.

191—175

Paris.

11. MERCREDI Trans. de S. Benoît. 192—174

Paris.

Rattman at factory -
fixed Automobile regulator at
night.

JUILLET

12. JEUDI. Saint Gualbert. (P. Q.). 193—178

13. VENDREDI. Saint Eugène.

194—172

Paris.

Left for London tonight

JUILLET

14. SAMEDI. Saint Bonaventure. 195—171

London. Arrived at 6 A.M.
Interview *Hinterbottam* and
meeting with *Hopkinson* arranged
for Monday.
Lobby Theatre at night.

15. DIMANCHE. Saint Henri. 196—170

London.

JUILLET

16. LUNDI. Saint Eustache. 197—169

London. Met *Hinterbottam* & *Hopkinson*
this morning on discussing
what shall be done before the
Parliamentary Committee in regard
to the opposition made by the
Electrical Maintenance and Con-
struction Co.
Left for Paris at 8 P.M.

17. MARDI. Saint Alexis. 198—168

Paris.

Arrived at 6 A.M.

JUILLET

18. MERCREDI. Saint-Frédéric. 199—167

Paris.*Left for London 8 p.m.*London.

19. JEUDI. S. Vincent de Paul. 200—166

*Arrived 6 A.M.**Commencement of examination
before Parliamentary Committee
resumed at 4 p.m. till Monday.*

JUILLET

20. VENDR. Ste Marguerite. (P. L.) 201—165

London
to
Paris*Boarded on tidal train arriving
Paris at 4 p.m.*Paris.

21. SAMEDI. Saint Victor. 202—164

JUILLET

22. "DIMANCHE. Sainte Madeleine. 203—163

23. LUNDI. S. Apollinaire. 204—162

Paris. Meeting of Loc. Lead at Communist Edition—

JUILLET

24. MARDI. Sainte Christine. J. Can. 205—161

Paris
London left for London 9.40 A.M.

25. MERCREDI. S. Jacques, apôtre. 206—160

London left on Lital train for Paris
Paris 11 A.M.
Interview with Mr. Muntzbaum
in morning.

JUILLET

Paris

26. JEUDI. Sainte Anne.

207—159

Paris

27. VENDREDI. Ste Nathalie. (D.Q.). 208—158

JUILLET

Paris

28. SAMEDI. Saint Samson.

209—157

Paris

29. "DIMANCHE. Sainte Marthe. 210—156

JUILLET

Paris

30. LUNDI. S. Abdon.

211—155

Paris

31. MARDI. S. Germain-l'Auxerrois. 212—154

AOÛT

Paris

1. MERCREDI. Saint Léonce.

213—153

Paris

2. JEUDI. Saint Étienne, page.

214—152

*Interview with Mr. Long & visited
factory with he & Piem*

AOUT

Paris
Hulgate

3. VENDR. Inv. de S. Etienne (N.L.). 215—151

4. SAMEDI. Saint Dominique.

216—150

Hulgate

AOUT

Hulgate

5. DIM. Saint Cassien, évêque.

217—149

6. LUNDI. Transfig. de N.-S.

218—148

Hulgate
Paris

Left Hulgate 6.00
Quint Paris 2.00 }
Living at Long now -

AOUT

Mrs.

7. MARDI. Saint Albert.

219-147

*Sory all day**Mrs.*

8. MERCREDI. Sainte Léonide.

220-146

Sory all day

AOUT

Mrs.

9. JEUDI. Saint Firme.

221-145

*Lunched with Gilliland
Interview with Paul**Mrs.*

10. VENDREDI. Saint Laurent.

222-144

AOUT

11. SAMEDI. Sainto Suzanne. (P.Q.) 223-113

*Went down with Cartheimer**Mrs.
Houlgate*

12. "DIMANCHE. Sainto Claire.

224-142

*Houlgate
Gardiner
Houlgate*

AOUT

13. LUNDI. S. Hippolyte.

225-141

*Houlgate
John**Interview with Colonel**Chaque colon at long table*

14. MARDI. Saint Eusebe. v. j.

226-140

*Mrs.**Colonel at long*

AOUT

15. MERCREDI. ASSOMPTION. 227—129

16. JEUDI. Saint Roch. 228—128

AOUT

17. VENDREDI. Saint Mammès. 229—137

18. SAMEDI. Sainte Hédène, (P. L.), 230—136

*Mrs. Ernest Lee. Laid et Ernest,
Houlgate left for Houlgate*

AOUT

19. "DIMANCHE. Saint Donation. 231—135

*Houlgate
Beauville
Houlgate**Race at Beauville*

20. LUNDI. Saint Bernard. 232—134

*Houlgate
Paris*

AOUT

21. MARDI. Saint Privat.

233—133

22. MERCREDI. Saint Symphorien. 234—132

*Meeting of Electors
Continental*

AOUT

Ami - 23. JEUDI. Sainte Sidonie. 235-131
*Placed them as directors
 of Factory.*

Ami - 24. VENDREDI. Saint Barthélemy. 236-130
Amigate Left for Amigate with Ray.

AOUT

Amigate 25. SAMEDI. S. Louis, roi. (D.Q.) 237-129

Amigate 26. DIM. S. Zéphirin. F. des J. Canic. 238-128
*Dined with Beliveau at house of
 William the Conqueror.
 Regatta.*

AOUT

31. VENDREDI. Saint Raymond. 243—123

SEPTEMBRE

1. SAMEDI. S. Lou, S. Gilles. (N.L.). 244—122

*Paris**Fixing tailor. Gave to Lefevre*

SEPTEMBRE

2. DIMANCHE. Saint Justin. 245—121

*Paris**Spent day with Goddard
breakfast at Sunday & afterwards
dined together. Row de Bellayne.*

3. LUNDI. Saint Grégoire.

246—120

SEPTEMBRE

4. MARDI. Saint Rosalie.

247—119

5. MERCREDI. Saint Martin.

248—118

*Idi.**Went to see the Steam Engine*

SEPTEMBRE

6. JEUDI. Sainte Roine.

249—117

7. VENDREDI. Saint Cloud.

250—116

*Idi's
Haulgate**Left at night for Haulgate
got there at midnight*

SEPTEMBRE

8. SAMEDI. Nativité de N. Dame 251—115

Amalgate Rested most children -

My experiment tried again
 F. dynam 17 lights 16.00.
 Good, 17 lights
 16.00 current
 110 volt. sent away.

Amalgate
Bayeux
Care
Amalgate

9. "DIMANCHE. Saint Omer (P.Q.), 252—114

Saw the Bayeux tapestry
Saw Care pretty well

SEPTEMBRE

10 LUNDI. Sainte Pul. h'orio. 253—113

Amalgate
Pari. Left 6.57 arrived Pari 2 p.m.

11. MARDI. Saint Hyacinthe 254—112

SEPTEMBRE

Paris

12. MERCREDI. Saint Raphaël. 255—111

*Put up the 2 dynamos at
the factory & motor & got the
scrubs -
with 2 cylinders
heavy and 46 lamps
41 10118 - 90 lamps.*

Paris

13. JEUDI. Saint Maurice. 256—110

*Ran & 3 friends at factory -
Large C dynamo had 400 dyn
- then ran 100 light dynamos -
not finished yet -*

SEPTEMBRE

*Paris
Houlgate*

14. VENDREDI. Ex. de la Sainte Croix. 257—109

15. SAMEDI. Saint Nicomède. 258—108

Houlgate

SEPTEMBRE

*Amicale
Véhic*

16. "DIMANCHE. Sainte Lucie (P. L.). 269—107

Mis.

17. LUNDI. Saint Lambert.

260—106

*Sent to Mr. Miller at his house
Good*

SEPTEMBRE

18. MARDI. Saint Jean Chrysostome. 261—105

19. MERCREDI. S. Janvier. Q. T. 262—104

SEPTEMBRE

20. JEUDI. Saint Eustache.

263-103

Paris

21. VENDREDI. Saint Mathieu.

264-102

Used 100 light dynamo - first test.

SEPTEMBRE

22. SAMEDI. Saint Maurice.

265-101

*Paris**W. B. + children returned from St. George's
Meeting with Lory. at 33 Ave. de l'Opera**Paris*

23. "DIMANCHE. S" Thécle. (D. Q.) 266-100

Hotel Bruck.

SEPTEMBRE

24. LUNDI. Saint Andoche

267-99

25. MARDI. Saint Firmin.

268-98

SEPTEMBRE

26. MERCREDI. Sainte Justine.

269-97

27. JEUDI. S. Côme, S. Damien.

270-96

*Année d'Œuvre Industrielle
à l'usine*

SEPTEMBRE

28. VENDREDI. Saint Oéran, évêque. 271—95

Conseil Continental al
27 Rue de la Chaumière et Aubin

29. SAMEDI. Saint Michel.

273—94

SEPTEMBRE

30. DIMANCHE. Saint Jérôme.

273—93

OCTOBRE

1. LUNDI. S. Rémy, évêque. (N. L.). 274—92

OCTOBRE

2. MARDI. Saints Anges Gardiens. 275-81

3. MERCREDI. Saint Gérard. 276-80

*Quid Hotel de ville plan
first night*

OCTOBRE

4. JEUDI. S. François d'Assises. 277-89

Expériences al Hotel de Ville

5. VENDREDI. Saint Froilan. 278-88

OCTOBRE

10. MERCREDI. Saint François B. 283—83

Paris

11. JEUDI. Saint Gommer.

284—82

Bird new 500 light machine
at Long (Lucas.)

OCTOBRE

12. VENDREDI. Saint Vilfrid. 285—81

13. SAMEDI. Saint

'Petit Journal'
of today.

L'ECLAIRAGE DE L'HOTEL DE VILLE

Elle soir, à cinq heures et demie, on a fait l'essai général, à l'hôtel de Ville, des appareils électriques devant servir à éclairer les divers locaux du premier étage.

1° Lampes ordinaires, appliquées aux murs des bureaux, ou suspendues au plafond des pièces de service;

2° Lampes portatives, appareils analogues aux bocs de gaz portatifs s'allumant et s'éteignant au moyen d'une clef.

3^e Lampes montées sur des lustres de diverses formes, dans la salle des rémoca, la bibliothèque, les salles des commissions de l'assemblée municipale.

L'ancienne salle du conseil, au pavillon de Flore, était déjà éclairée à la lumière électrique,

Dans le nouvel hôtel de Ville, le système employé est celui d'Edison, qui se rapproche beau-

La lampe Edison se compose, on le sait, d'une sorte de bocal de verre dans laquelle le vide a

OCTOBRE

Mio.

14. DIMANCHE. Saint Calixte, pape. 287—79

15. LUNDI. Sainte Thérèse. 288—78

OCTOBRE

16. MARDI. Saint Gal, évêque. (P. L.) 289—77

17. MERCREDI. Saint Florentin. 290—76

OCTOBRE

18. JEUDI. Saint Luc, évangéliste. 291-75

19. VENDREDI. Saint Savinien. 293-74

Paris

*Found Hotel de Ville plans
badly arranged + went to
work to fix it-*

OCTOBRE

20. SAMEDI. Saint Caprais. 295-73

Paris

Ran Hotel de Ville plant-

21. DIMANCHE. Sainte Ursule. 294-72

Paris

*Hotel de Ville plans ran 4 hours
* day & lumber up the bells*

OCTOBRE

30. MARDI. Saint Lucain.

303-63

Meeting of *Seigneur Tadousac & Coult*

31. MERC. S. Quentin, c. J. (N.I.).

304-62

Meeting of *Compagnie Continentale*

My resignation read =

NOVEMBRE

1. JEUDI. TOUSSAINT.

305-61

Paris,

2. VENDREDI. Trépassés.

306-60

*Paris*Meeting of *Comp. Continentale*
not present b.c. my resignation
was to be taken

NOVEMBRE

7. MERCREDI. Saint Ernest. 311—55

Paris
Amsterdam *Left for Amsterdam early*
morning & arrived at night

8. JEUDI. Saintes Reliques. (P. Q.) 312—54

Amsterdam

NOVEMBRE

9. VENDREDI. Saint Mathurin. 313—53

Amsterdam

10. SAMEDI. Saint Juste. 314—52

Amsterdam
Rotterdam
Amsterdam

Met Ayda Gope

NOVEMBRE

11. DIMANCHE. Saint Martin.

315—54

Amsterdam

12. LUNDI. Saint René.

316—50

Amsterdam
to

NOVEMBRE

13. MARDI. Saint Brice, évêque.

317—49

*Paris**Arrived 6 A.M.*

14. MERCREDI. S. Vénérand. (P. L.) 318—48

NOVEMBRE

15. JEUDI. Sainte Eugénie. 319-47

Mrs

16. VENDREDI. Saint Edme 320-46

Meeting, Continental &
Society Elections

NOVEMBRE

17. SAMEDI. S. Agnan, évêque. 321-45

Mrs

Meeting, Eve, Land et Court, Edin

18. DIMANCHE. Saint Odon. 322-44

Mrs

Breakfast with Mrs & Children T. M. C. M.
at Marguery

NOVEMBRE

Paris

19. LUNDI. Sainte Elisabeth. 323—43

*Anniversaire de la Sainte on de la Cella
on refusal to accepting resignation.*

20. MARDI. Saint Edmond. 324—42

*Paris**Meeting Commemorative*

NOVEMBRE

21. MER. Présentation de N.D. (D.Q.). 325—41

22. JEUDI. Sainte Cécile. 326—40

DÉCEMBRE

5. MERCREDI. Saint Sabas.

339—27

6. JEUDI. Saint Nicolas

340—26

DÉCEMBRE

7. VENDREDI. S^{te} Fare, vierge. (P.Q.) 341—25*All days at factory standardizing
samples.*

8. SAMEDI. Conception de N. D.

342—24

DÉCEMBRE

9. DIMANCHE. Saint Léocadie. 342—23

*Les Sœurs
Hennu Waisin with Children*

10. LUNDI. S^t Eulalie. 344—22

DÉCEMBRE

11. MARDI. Saint Daniel. 345—21

12. MERCREDI. Saint Maxence. 346—20

DÉCEMBRE

21. VENDREDI. Saint Thomas. (D. Q.) 355—11

22. SAMEDI. Saint Honorat.

356—10

*Mus**Swam here from America**Went to Factory**" Hotel de Ville**Boussion**Gare d'Orléans**Prinseppe**" With Pope & Mlle D. Martin**& see Daniel Bouchard**" Eden Hall after*

DÉCEMBRE

23. DIMANCHE. Saint-Victoire. 357—9

24. LUNDI. Saint Delphin: v. j.

358—8

Charles Batchelor Journal, Cat. 1336

This journal covers the period January 15, 1886-September 5, 1887 and contains numbered entries by Batchelor about his business and personal affairs. Many of the entries concern Edison's electric light and his manufacturing companies. Included are comments about labor disputes at the Edison Lamp Company and the Edison Machine Works, the formation of the Edison United Manufacturing Company, and the transfer of the Edison Machine Works to Schenectady, New York. There are also newspaper clippings relating to labor disputes and legal actions involving Edison and his companies, including a legal opinion on the validity of Edison's electric light patents in the United Kingdom. A number of entries concern experiments on dynamos, lamps, transformers, and phonographs. Also discussed are Edison's health, his marriage to Mina Miller, and the construction of the new laboratory at West Orange, New Jersey. An anecdote about Edison that was related by his father, Samuel Edison, is recorded. Statements of Batchelor's personal assets and liabilities appear at intervals of six months. The book contains 285 numbered pages.

Blank pages not filmed: 1-3, 284-285.

Missing page numbers: 69-70.

1. Electric Light meeting, Jan 15th 1886.
 2.15 p.m. to discuss
 our underground rights in uptown
 district.

2. Temp Co meeting - Jan 18 1886.
 attended.
C & T Co meeting, attended subject:
 Annual report.

3. Central station dynamo - Jan 19th 1886.
 Designed a 150
 volt 500 ampere 700 revolution dynamo
 for central station work.

4. Elegraph dynamo. Designing a new plant
 for N. V. & C. to replace the plant
 that I put in to work the takers at 16
 Broad Street - consists of a straight
 line engine and two 250 x 50 amp 550
 turn dynamo.

5. Westrummick dynamo: No line "25" taking
 today.

6. New evening business: Jan 24th 1886.
 Made estimate for cost
 of wire covering business and decided
 with O'Brien to go ahead with it at
 our shops in Bridge St Brooklyn.

7.
H. V. Tel. Co. Machines. Jan. 22, 1886.
 One of the dynamo
 of the old plant got closed and the
 whole load was carried by the other.

8.
Reception at C. of A. at night. attended -

9.
Edison Machine Works. Jan 30th 1886.
 meeting of the
 Edison Machine Works
 to Edison Mfg. Mfg. Co
 & the Electric Light Co. to confirm the
 consolidation of all three into "E. G. M. W."

10.
R. R. Loomis and Telegraph. Feb. 1st 1886.
 Was present at
 an exhibition of his system at Staten
 Island, it worked well.

11.
Price of lamp. Feb. 2, 1886.
 Inval sent to the Company
 Antismoke Edison officially. Got the price
 of manufacture of the lamp to 33¢.

12.
Communion connection. Signed Canadian
 application for patent on this new method
 of connection

13.
Boston Feb. 9 1886
 Left for Salem at 10¹⁵ a.m.

14.² Calum Station: Waited at station. They were clearing out the place and had two engines here to set. Went to Lawrence and saw the station. Machine running in very bad shape, sparking terribly.

16. Pacific Mills. Visited Pacific Mills today
Stolland Station. Visited to Stolland, Mo.
Station at night. Just had a terrible
 storm (flood) which had torn down all
 the wires in town. Municipal
 running well.

Feb 12 1886
Called on Mr. Hayes the Chairman of the
Lighting Committee in Portland with
Mr. Sawyer, to talk on lighting matters.

18.1 Sunday, Feb 14th 1855
Providence. Stuck here since Saturday
 morning at 2 A.M. by floods etc.

191 Sunday, Feb. 16, 1886
Wins-Edison Fish Torpedo, ~~Edison~~ Edison, J,
 and Gardner Wins signed as incor-
 porators of the company today.

20.¹ Feb 17 1886
Taylor and Co. - Taylor, Hume and I signed

Article of incorporation of Taylor & Co.

21.

Feb. 16, 1886.

Sam. Adams Taylor & Co. We had a meeting of incorporators & elected directors and officers. Art Lewis, G. Lewis & met Mr. Holcomb at the Windsor at night and made arrangements for the sale through him of the Taylor's boats in Ohio.

22.

Friday Feb 17th 1886.

Sam. Adams Taylor & Co. Had another meeting at the office of the President Mr. Anderson.

23.

Saturday Feb 20th 1886.

Notes Odismiana, Farewell dinner to J.A.E. prior to his marriage. Present. C. B. Kuhn, C. B. Kuhn, P. D. Smith, A. B. Kuhn, J. B. Kuhn, G. C. Lewis, Lewis Taylor, P. B. Kuhn, C. B. Kuhn. General regret that W. Kuhn & W. Kuhn had somehow been overlooked.

Feb. 22nd 1886

24. Finished 'Carnegie's' round the world.

25.

Feb. 23rd 1886

Adams' marriage. Off. wedding party by special car for Adams and attended in evening returning on the 25th.

26.

Feb 24 1886.

Sam. Adams Taylor & Co. Art Lewis, G. Lewis & met Mr. Holcomb at his house to discuss.

284
W. D. RICH
SUPT. OF CONSTRUCTION.

THOMAS A. EDISON,
Central Station, Construction Dept.,
No. 65 FIFTH AVENUE,
NEW YORK.

Address reply to.

188

Re: Memorandum Marcel 20th 86
of Charles Battelet in the
sum of ten thousand and no more
being a two third payment
of fifty shares of the Edison
Traction and Railway Company

Edison Traction and Railway Company

Lapsed business, rep. opinion of Wilson author
boy infirmable

27th Tuesday, March 2, 1886.
Williamburg property: Signed Bond and
mortgage for \$3200 5 years for two lots
28th Co. Rd 10th St & Berry St. Williamburgh
Taylor & Co. Held meeting of directors -

29th (Monday) Feb. 4, 1886
Fixed Edison Shops: At a meeting of the
directors of the Edison Co. for isolated
lighting & day the directors voted in fa-
vor of a proposition put forth by the
Pres. in which the isolated Co. help
small construction Co. & do the business
instead of doing it itself with the object
of getting entirely out of construction
at some future time.

30th (Monday) Feb. 6, 1886
Editor Pulverizer: Agreed with R.H. Boyer
to make a publisher & keep it in
working order for three months for
two hundred shares of stock - Wilson
agrees to bear half the expense and I
deliver half the stock to them.

31st (Monday) Feb. 6, 1886
Sprague R.R. Motors: 4 new Sprague series
of 500 each for 4 new car motors.

32¹
United Edison Sys. Wed 26 1886.

Johnson, S. Bergman and Upton
Assured Ship Consolidation

33¹
Prague R.R. Wed 27 1886

Tried his at 24th Street (excellent)

34¹
U. V. L. B. Plant. Wed 29 1886.

Tried his plant to-
 day. Good, no vibration, everything
 satisfactory.

35¹
Johnson's Lamp. Wed 30 1886

Tried the principle of
 Johnson's lamp at the E. M. W. L. Co.
 and it worked in each case in fact
 it worked in every case as he had
 a large number of examples



36¹
Prague R.R. R.R. Thurs 1st 1886.

Another trial of his
 at which Alf. Rowland assisted
 was a perfect success at 24th Street
 now it is proposed to fit up a Car

37¹
U. S. E. R. R. Co. April 5th 1886

There was a meeting of the
 Directors of the U. S. E. R. R. Co. to consider
 the question the consolidation of E
 R. R. interests

382

April 6th 1916United Edison Shops

In a discussion at 60 sth Ave. today, Chas. J. Wilson Co. Ryman practically agreed that the following was a basis on which the Shops could take up the isolated Co. business. The consolidation of the Shops being abandoned at present as intractable.

1. Isolated Co. goes out of business.
 2. Shops form a selling department which receives goods from Shops at present list prices of Shops. Selling Dept. has no interest in new or renewed lamps other than a percentage for handling them, that all going to the Light Co. or Isolated Co.
 3. Selling Dept. pays a royalty to the Light Co. of 2% on everything.
 4. If selling dept. makes losses the same to be shared equally by all three Shops.
 5. All profit to Selling Dept. to be divided between itself and the Isolated Co.
- In an answer from Edison to a telegram I sent he says he agrees with us on this & we are now working up the details.

\$8.77 per share net \$8,000. \$8,000 of
his fund goes in Treasury. \$8,000 goes
to him. Gold, Linn's makes \$8,000 +
C.A.G. asks for \$2,000 for himself + says
he will get all we want

47thOct 28th 1886N. O. S. L. C. dynamo. at 20th St.

Saw Mr. Berum about putting in five
small machines at 23rd Street
Building.

48th

Oct 29 1886.

United Edison Photos. Bergman. C.A.G.

Upson and myself met at 63rd & Ave.
It was decided that "Penture" should
be included from the royalty, that
we wanted 10% of price of lamps
for handling them, and 2% royalty
instead of 3% as specified in Mr.
Cotari's letter

49thMay 1st 1886.Labor difficulties.

Committee of the shop
presented me with a list of letters from
the labor union and asked us to act
up to them or they would strike.

The principle items were:-

1. Men have labor & ten hours pay
2. The man to run any one machine
3. Waiters time & pay until 8 p.m. +
drinks time after

best block in the city. In the next
cellar are about 6000 cells of battery
of the W.V. St. C. and I have made
arrangement to make a machine
to do all this by dynamo.

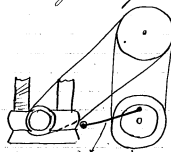
584

Water Plant at Commercial Gazette.
The carbon in lamp shaped like ours
but shorter should judge about
80 rolls. They had no instrument
in circuit to tell anything about
load or E.M.F.

564

Central Union depot, Cin. This plant has
two 400 light 6 over dynamo
driven by Buckeye engines. The
plant is under the sidewalk & is
cramped for room, in order to
get long enough belts they
had to counter shaft
up 20 ft.

Now the
Shiloh Plant
Summit House
and other of our
plants.



Drumming for 17 engine

57.

Discount: Made a verbal arrangement with W. C. Light & gave 5% off of sales reached \$10000. regarding I got prompt payment the 25% of each month.

58.

Les Moines accounts settled with Mr. Clark. They to pay our bills and Gen W. will give them a credit of \$300 against new machinery in the future.

59.

Muskegon plant
City Hall plant

60. Opera House plant

61. Union League Club

62. Morton plant in City Hall

63. Wrote this

4 300 light machines

1 See engine of 125 H.P.

This drives a shaft having 4

10 foot pulleys on which drive

directly on the dynamo & are

so close that they have to use

buffer wheels. See 1. Pulleys

wee clutch pulleys.

Amperes meters were

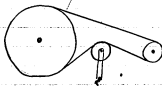
marked for 300

amps of 11 volts

each.

Safety catch in each circuit -

exactly same as ours.



64³Life of Camps

New York May 9th 1886
 In my journey west I noticed that in Cincinnati the short life of Camps was complained of. When I went to Chicago, I find them making contracts every day and guaranteeing 1000 hours - In both places the candle power looks all right - Chicago say they have in difficulty and find almost guarantee 1000 hours. I think it is because they have better men and larger plants also the plants are put up to have very little variation in drop.

65³Water instead of Oil

All machines are piped up for water in Chicago and that is an excellent thing.

66³Edison non polar armature

May 11th 1886.
 Edison gave me an experiment key -
 In order to have no pole in the armature wind up in spiral for every wire. Key passes over top wind on horizontally, to neutralize the magnetic effect. Cannot quite see that it will do it but I shall try the experiment -



67.

P. M. May 12th 1886

Chas Machin H. Gwent Road. Called
and notified me that he should
take out the share in the shop, as
when we gave up the right to the
share he had a right to take them
out. He wants us to pay the cost
of them.

68.

Williamburg Property. Sent my deed
for two lots No 10 St Henry &
Jackson & Burr to have them
deeded to Taylor and Co. subject
to the Hunt mortgage -

69.

May 15th 1886

Upton sailed for Europe.

70.

May 17th 1886.

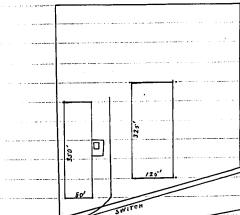
Taylor & Co. Landed my two lots to
Taylor & Co. today.
Sent in sworn statement of value
of Taylor & Co. for taxes today.
Labor trouble. Men have all struck on
14th & after consultation for two
days we have decided to stand
up against them in regard to
running the shop as we see fit.
We have ordered the 9 hours
work and 10 hrs pay. No
contact clause we cannot allow.

o. Edison.

May 22, 1886
 74°

New Shops.

Even and myself went to Schenectady to look at some ship property which Geo Place said could be bought for \$55,000. On the left hand side of the N.Y. C.R.R. about 1000 yds from the Station we found two shops - evidently built for manufacturing locomotives or cars were two shops: 55'0" x 80' +



55'5" x 128' one of which had a boiler house and chimney attached one was floored + the other bare.

This is a decided bargain - Geo Place goes there

today and if he gets an option for 10 days or if

we can investigate + decide for the C.R.R.

No. 1

Edison Machine Works.May 23^d 1886Work for 1885. Edison.

Jan	\$0.008.41	July	\$16,901.20
Feb	13,782.88	Aug	32,434.01
Mar	16,375.14	Sept	41,858.73
Apr	24,939.60	Oct	26,888.63
May	18,614.95	Nov	26,888.92
June	17,457.20	Dec	27,609.49
Total \$292,862.91			

Y.Y.

Dr. W. & L. Co.

Dr. Dec.	\$58,500.00	Old bal. 1884	\$40,699.37
Ind. Transp.	14,292.16	Transp.	61,180.28
Balance	46,546.17	3 Transfers	12,528.08
Or	\$114,339.63		\$114,339.63

Y.S.

New Works. H. C. M. N.May 25th 1886.

At a meeting of the Edison Machine Works board today it was decided to give to Geo. Place the right to negotiate for the Schenectady Locomotive Works at a price not to exceed \$100,000 (including all Commission) \$42,570. Meeting was held at Laboratory and adjourned to Edison's home at Orange, N.Y., from 8-9:15 with him & bring more detailed information of the property.

49

John Stubbins.May 26th 1886

The C.M.W. started up today (shop having been stopped since the 16th) with about

80⁺ men.Sprague R.R. motors.

Sprague R.R. motors sent in today to have the fields around with the plans were as previously as it is paid they cost too much

81

May 26th 1886Edison Machine Works Stock.

Received today my interest in L. Stock of the Edison Machine Works Consolidation 1350 Shares. It is divided as follows:-

J. A. Edison 5441 Shares.

C. Batchelor 1355

J. W. Hunt 155

H. Loom 114

J. H. Myle 155

J. J. Morgan 155

S. Swell 125

\$4500 at \$100 each.

82

New Shops. C.M.W. A judgement dissolving the Corporation of the McQueen locomotive Works at Rhineclay, was granted by Judge Fish today on the ground that the Co has not paid in their stock. I have not carried on the names for which they were incorporated. John A. DeLime was made receiver. On

inventory will be taken as soon as possible and
the property sold at auction

85.) May 27 1886

Nipal Coaster Lgt. Co. Montreal Can.

This factory was damaged by fire to the
extent of \$7,000. insured.

84'

New Shop

May 29th 1886.

Travelling in Williamsport Pa. to see some
plots of ground for a new shop. Drove to
Shenandoah. Met Mr Shaw & Mr Sumner
& went to see the site of the old Star Ore
Co about two miles out of town on the
R.R. We were afterwards shown a
piece of land about 80000 opposite the
depot & to which we could get a side
track from the Penn. R.R. but not from
any other. Left plans of new building
with Shaw & asked him to get informa-
tion on other matters from manufactu-
rers which we could not get away to
being liberation day. Left at noon for
Burlington.

83.)

Labov Houles.

May 31st 1886

Met the meeting in 114 Gough
St (with Mr Linn) the Shop Committee
and agreed that in future the Shop
should run as follows:-

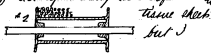
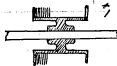
I have labor 40 hours day; time and a half until 10 p.m. and double time afterwards. In every other respect the shop to be run just as the managers decide & no interference whatever to be tolerated. On this condition the men all agree to come in to work tomorrow morning.
 W. H. Hume & I went in Detroit looking after the work for that town.

86

June 1st 1896labor troubles.

All our men in today and so ends the strike.
Dynamo for power station.

Mr. Sprague suggested that we should make a dynamo (different from the ordinary Edison type) for power station. The difficulty of getting a license from the Edison Electric Light Co. being great among the men existing contracts with other people. He proposed to make an armature as follows: 7 the outside of the cylinder



proposed #2 the cylinder filled & its flange with unaltered iron core and as it

seems to be cheaper than our present armature I decided to make immediately a #3 in that manner to see what difference in economy and price it would make.

88, May 31st 1886
Contract price made Oct. 18th 1886.

on Edison Dynamo work

Making everything on a dynamo

#1	\$2.20	#6	\$3.50	#16	\$6
#2	\$2.50	#8	\$4.40	#20	\$7.55
#3	\$2.75	#10	\$4.40	#24	\$8.80
#4	\$3.45	#12	\$5.05	#28	\$5.05

Cores: Turning boring, tapping & winding
5 ft x 6 ft. 12 in. 2 in. 1 in.

#1	.50	1.70	#10		
#2	1.00	1.90	#12		
#3	1.20	2.35	#16		
#4	1.35	3.60	#20		
#6			#24		
#8			#28		

Findings: Rad 620, magnet coils, symbols

Comm. Rings & nut

#1	2.60	#6	\$3.50	#16	\$4.35
#2	2.60	#8	\$3.50	#20	\$4.35
#3	2.60	#10	\$3.50	#24	\$4.35
#4	2.60	#12	\$3.50	#28	\$4.35

Pinon Rock. Turning and fitting on rockers arm.

*1 14.0	*4 15.0	*10 2.25	*20 3.15
*2 16.0	*6 15.0	*12 2.55	*M1 2.10
*3 16.0	*8 2.00	*16 2.75	*M2 2.05

Shaft. turning, plates bored then and
amateur hole turned after assembling.

*1 15.0	*4 2.00	*10 2.80	*20 5.20
*2 15.0	*6 2.10	*12 2.95	*M1 2.60
*3 20.0	*8 2.60	*16 3.90	*M2 2.95

Assembling Amateur. always out, plates
cut for key and division, discs turned off
plates keyed to shaft, discs assembled and
made ready for turning on life.

*1 16.0	*4 1.95	*10 3.00	*20 4.00
*2 15.0	*6 2.25	*12 3.40	*M1
*3 15.0	*8 2.40	*16 3.90	*M2

Assembling dynamo:

Drilling, tapping, & reaming beds and zinc
pellow Rock & fields, boring pellow blocks and
fields, latting pellow blocks, drilling Tapp,
Keyport & rails, assembling machine before

and after testing.

*1 4.55	*4 6.75	*10 9.10	*20 13.50
*2 8.20	*6 11.50	*12 9.75	*M1 7.50
*3 8.00	*8 8.25	*16 12.00	*M2 9.75

Mapping Comm. bore. cad.

*2, 3, 4, 6, 8, M1, M2, 7, 2	1 1/2 p. cad.
K, I, S, T, Y, 7 H	1 3/4 p. "
*10, *12, *16, and 20.	2 1/2 p. "

Nica. Complete for Commutator.

*1	1.75	*21	3.00	K	1.75	H	1.75
*2	1.75	*10	1.95	G	1.85	Z	1.75
*3	1.75	*12	1.95	R	.85	M.1	3.40
*4	1.75	*16	1.95	T	1.75	M.2	4.15
*6	1.75	*20	1.95	S	1.75		
*8	1.75	Z	1.75	Y	1.75		

Commutator Complete. Nica. all + bare
bragcd furnished.

*1	2.45	*7	6.25	H	4.25	Z	4.60
*2	3.40	*12	5.75	L	4.75	M.1	4.15
*3	3.60	*16	5.75	K	4.55		
*4	3.35	*20	6.05	R	2.75		
*6	4.35	M.1	9.25	S	4.00		
*8	4.45	M.2	10.45	T	4.01		
*8	5.45	G	2.45	Y	4.50		

Breakholders. all take and vice work done.
They must be turned in Stockroom
Complete and studs nut + fibre.
Complete. No furnish machine screw.

*1	3.00	per set
*2, 3 & R	3.00	" "
*4 & T	3.10	" "
*6, *8, *10, *12 & S	3.45	" "
*16 & H	3.45	" "
*20	4.15	" "

Brackets. Making Complete.

*1	50	2, 3, & 4	1.60	6, 7, 10, 12, & 16	2.20
*20	1.50	K 2.75	Z 4.00	H long 2.80	
acc.	4.00	K. C.S. 2.20			

Pulley B. Turning, slotting & finishing

"1- .85 "3- 1.10
"2- 1.05 "4- 1.15

Roughs making complete.

"1, 4 21, 3, & 24. 18¢
"6, 7, 10, 12, & 16 25¢, "20, 11¢

Pulley C. Turning, slotting drilling and tapping

"6 1.05	"12 1.35
"8 1.05	"16 1.40
"10 1.35	"20 2.40

Staves: - finishing complete.

"1, 2, 3, 16 & 20 40¢.
"4, 6, & 8 45¢
"10 & 12 50¢

Rabbit boxes: Boring and turning.

"1 1.14	"8 .28		
"2 .17	"10 .34		
"3 .21	"12 .37		
"4 .23	"16 .43		
"6 .26	"20 .43		

Building base frames: -

"1 1.40	"6 2.35	"7 2.10	
"2 1.41	"8 2.35	"20 4.15	
"3 1.45	"10 2.40	"11 2.	
"4 1.45	"12 2.50		

Amalarea

	Winding	Counting	Reading			
*1	2.80	4.00	1.00			
*2	4.50	1.40	1.10			
*3	4.50	2.40	1.60			
*4	3.40	2.40	1.10			
*6	3.40	2.40	1.10			
*8	3.50	2.80	2.00			
*10	3.50	3.20	1.40			
*12	4.00	4.00	2.00			
*16	5.40	4.40	2.50			
*20	6.50	6.00	3.10			
*41	8.00	5.00	1.50			
*42	8.00	5.00	2.50			
*44						
*45	3.40					

getting ready to test. Mapping boxes, fitting
ammunition & probe arm, balancing
pulley & laying on

1	3.00	10	3.30		
2	3.45	12	3.30		
3	3.45	16	6.00		
4	3.45	20	6.00		
6	4.30	M1	4.50		
8	3.00	21 2	3.30		

89.

June 3rd 1916.

United Edison Shops

C. H. J., J. A. C., Bergman, Hutchinson
themselves and I met at laboratory to
discuss ways and means to get over
the difficulties that put themselves
in the way of starting this business.
It was decided that the C. H. J.,
Bergman & Co. & the Lamp Co. should
each put up \$1000 each. As the
C. H. J. has so many obligations to
meet this summer the money should
be advanced (as Mr. Johnson said) to
it by the Lamp Co. All goods
delivered to the United Edison Shops
should be paid for by note of the
United Edison Shops understood by
the three companies.

It was generally agreed by all that
if September 1st place could be got for
\$19,000 per year that it would be well

to Dr. Es. Bergman & Co. sell their fixtures
go to the United Edison shops at 30% off.
Prague Motor.

Look an order letter Re. ten K.K. armature
to same winding as the last two for
400 each.

Est. 20 2 HP. at \$ "110-139

" 10 1 1/2 HP. at \$110 "130-139

91. " 10 3 HP. at \$162 "120-149

K. V. L. Dr. Machines at 25% off

Gave in three estimates on his work
today 5 dynamo & all brushings,
distal pulley wheels, complete running.

92.

Repair Central Station.

Men returned and he looks undisturbed
by we shall get the orders but we shall
have to put down the continuous order

93.

Wokula Station.

Small returned made very satisfactory
arrangement for payment

94.

New Ship.

Mac told me today that the
negotiations for the McQueen boat
ships were completed but should be
called on 8 pay the money shortly -
Lombard has thought of the matter
in hand & is now searching

955
Edison Lamp.

In *Electrician*
May 2, 1886.
Section of
Justice Built of
London in
Re Case of
Edison v.
Northhouse & Co.

June 5th 1886

JUDGMENT.

Thursday, May 20th, 1886.

The trial of this case terminated on Wednesday evening, and Mr. Justice Barr delivered judgment on the 20th inst. He shall give a verbatim reproduction of the judgment when the proper stage of the proceedings is arrived at in the detailed report of the case, and content ourselves now with placing before our readers an abbreviated account which will put them in possession of the main points on which the judgment was based.

His Lordship, having remarked that at an early stage of the proceedings he intimated that there was no evidence of infringement of the Dees and Glimmingham patents, and that therefore the validity of those patents was beyond the sphere of the present enquiry, proceeded to deal with the Edison patent. There was one fact beyond contest, he said, namely, that before the date of Edison's specification no good and efficient incandescent electric lamp was made or known. He accepted, without hesitation, because it was also accepted by all the defendants' witnesses, Sir Frederick Bramwell's conspicuous description of Mr. Edison's invention, viz. that it is a vessel made entirely of glass, containing a carbon filament attached to conducting wires, the wires being sealed through the glass and the vessel exhausted of air to a very great degree. The defendants denied the validity of the patent, and also denied that they infringed it. He had all along been of opinion that there had been no infringement of claims Nos. 3 and 4 in Mr. Edison's specification, and he now also thought there was no infringement of claim No. 1, but in the view he took of claim No. 2 that question became unimportant. The question of the infringement of claim No. 2 depended on the meaning to be attached to the words "a carbon filament." If those words meant a carbon filament "as described" in the patent, he should hold that there was no proof of its infringement; but he did not so interpret those words. He held them to mean any carbon filament, however made, which possessed certain qualities or properties mentioned in the specification, or necessarily resulting from the description there given; to answer that description the carbon filament must possess durability and resilience, must be of small cross-section, offering a high degree of resistance to the passage of the electric current, must present but a small surface from which radiation of light could take place. He was disposed also to think, but refrained from giving a decided opinion, that the degree of resistance must not be less than 100 ohms. Taking that interpretation as correct, it was clear there had been infringement by the defendants. Taking Mr. Hawes's evidence, in which he said the defendants used carbon filaments, connected at the ends with platinum wire, in a vessel made wholly of glass, the leading wires passing into and from the receiver being sealed into the body of the vessel, and that the carbon filament used was flexible and as stable at high temperatures as it could be got, but that it was not made by Edison's process—taking that evidence, and applying his interpretation of the words carbon filament, there was an infringement of the patent. But it was said, assuming the infringement, the defendants are not liable, because the patent is invalid. The first reason in support of the invalidity was, that "a carbon filament" when taken to mean what he had held it to mean, was a description too vague and indefinite, or, to use the Solicitor-General's words, was too broad. That was an argument to which he could not succumb, for he saw no reason why a carbon filament having the properties mentioned in the Edison patent, and which the patentees told the public how to make might not properly be the subject of a patent, although it was capable of being made by methods and of materials other than those set forth in the specification. Secondly, it was said that the specification was not such as would enable the competent

the conclusion, firstly, that there was no sufficient reason for saying that this patent was invalid on any of the grounds suggested on the part of the defendants, amongst others, of course, that there was no ground for the assertion that it had been anticipated, or, in other words, that it was not new. In the next place, he held, attributing the meaning he had given to claim 2, that there had been a clear infringement by the defendants in their lamp. That being so, the decree he must give was that those of the plaintiffs who possessed the legal and beneficial interest of Mr. Edison's patent, that was to say, his assignees, were entitled to the pike. With regard to the other plaintiffs, of course the action would be dismissed.

Mr. Aron asked for a certificate that the validity of the Edison patent came into question for an order for an account of the profits made by the defendants by the sale of the articles in question, and for costs on the higher scale.

Mr. Justice Barry having assented,
Mr. CHARLES applied for a stay of execution pending the appeal.

His Honour WENTEN opposed, and pointed out that a final judgment having been given it was not competent for the Judge to suspend execution.

Mr. Justice Barry, although unwilling to press heavily on the defendants, and desirous of forwarding them on their way to the Court of Appeal, held that he could not grant the application made in their behalf.

Mr. Aron stated with regard to the lamps in the possession of the defendants that although the plaintiffs were entitled either to the delivery to them of those lamps or their destruction, probably an arrangement would be arrived at between the parties as to the course to be adopted pending the appeal.



96.^s June 6 1886.
New Shops. Saw Edison, he has arranged and put the 2nd one at 2nd St. ready to pay for the McAlmum loc. marks of the title should prove perfect.

97.^s June 9th 1886.
City of Edison Illuminating Co.

This A.M. met today at Atlantic City and I attended to represent the Edison Machine Works. What I was here (as I was obliged to leave at night) here was discussed. Motors, and

98.^s Municipal System.
Atlantic City Central Station.

Visited the Station and met West here. The building was of wood the masons were laying foundation for the engine and dynamo.

99.^s June 10th 1886.
Edison Station.

Outing from the Station N.Y. 9 June 10th 1886.

100.^s New Bedford Station

We have trouble again in the underground system. Have sent Muddell.

Pieces of Siding.

<u>Sec. 40 On the</u>	<u>Pice.</u>	<u>Sec. 40 On the</u>	<u>Pice.</u>
500.000	2.45	133.000	.93
450.000	2.27½	115.000	.87½
400.000	2.12½	105.000	.84½
350.000	1.96	90.000	.78
300.000	1.80½	80.000	.75
250.000	1.47	67.000	.70½
200.000	1.34	56.000	.67½
180.000	1.26	41.000	.54½
160.000	1.22	41.000	.52
144.000	.96½	32.000	.46
		24.000	.42

the above for 3 wire mains

For feeders 5¢ per foot extra

these prices are selling prices & don't include

1935

lamp factory.

June 11th 1886

Small tells me that the complaints on bad lamps have been so great that L.A. Co. has had to get out there & take charge of the manufacturing & get it back on a solid basis. He claims that up to the present the lamps were bad all the time but has generally put off all complaints until they had not a put off any longer.

Allen Machine Works.

Allen and Small dined with me tonight and we discussed matters relating to the new

104³Job at Khorstad

Letter, June Art-Dun and I had an interview with Mr. Frager, relative to his working Japan. June Samson & have a meeting Monday of himself, Anderson, Sean & myself to discuss the Art-Dun contract (if any) in Japan & take steps to instruct Mr. Frager how his company can act for us here. He has a provisional order for one torpedo boat for Japan.

105³Ream manufactory.

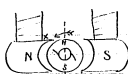
June 11 1916.

Year	Lamps sold	Bringing	each for.
1811	24,594	\$13,175.00	
1812	200,679	\$91,230.00	
1813	333,244	\$139,755.00	
1814	370,073	161,863.00	
1815			

106³ Compound Dynamite June 11 1886.

I find that compound dynamite are defective in that whatever you do to keep the bells constant on a dynamite does not alter the fact that you must move the brushes to the new sparking point. In machines with weak fields the sparking is constant & makes little difference but with no strong fields the difference would burn up the brushes. With a "A" compound we get 110 milli with full load & only 111 with no load but it brought it to 106 &

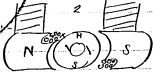
to adjust the brushes to the new sparking point. We tried putting the brass wire on one side only to distort if possible but it made no difference.



The trouble is that the N of the armature in coming over induces a S pole at x then making the brushes lead up further for the neutral point will pull back again as lead. I propose to rotate this by making the point at x strongly N by the current from the armature thus pushing back the N of the armature and keeping the new sparking point constant. i.e.:-



or so



The object in figure 1 is to so magnetise the point or tip that the induction it will keep back the distorting effect of the armature on the line of force at this place and no matter what current there is in the armature the line of force at x will always tend to go straight to the armature. In the second case the coil is so placed that it will magnetise the rim of the armature in such a direction

As to neutralize the load & tend to
Keep the neutral point in one place.
I shall immediately try both of these.

New Notes 1094

June 13th 1876
Spent today in Schenectady and Liv-
ing and Breuni. Went up by boat on 12th.
Got plans of place from Breuni and
measured off some parts to verify it.
Took a carriage and went all over the
town. Mr. Smith of the Locomotive said
they had at present 900 men, mechanics
ranged from \$1.50 to \$2.25 per day. Rent
was cheap.

Halter's Transformer 1095

June 14th 1876.
Fixed his machine this morning and
found that there was an exceedingly
small displacement of frunklin like the
thin case of. The coils are wound one
over the other. It would be better to
wind them side by side. Haller has
decided to winding them much
closer than he must put on & it is ma-
king noise. This is shape of iron of ar-

1095

mature.



H. V. M. Plans at 25th St.

Met John Brown
and took at 25th St and received the
order for the 5th machine all numbers
complete on base table & connected to

He enquired.

European Light Co. 110. Held a meeting at Cutting's office of Board to consider the action taken in regard to Pelland's scheme in Europe. Elmer J. Batchelder & Co. a committee were authorized to give him (Pelland) letters of attorney if they saw fit.

Olson Linn Fred Sjöfeldt. 111. Saw Anderson about the agency for Japan for Graeger & Co. He found that the agency (not exclusive) has been given to Holmboe. Therefore all we could do was to get them to work together - Graeger will see Anderson & see what can be done.

112.^s Notes Sold 3/4's of Sjöfeldt's and 1/2, 945, 819
to Olson Machine Works, etc.

113.^s June 16th 1886.

Miss Sjöfeldt. Received search from Toulumson of the McClellan Locomotive Works, and J.C.P. says here is no doubt it is all right and Toulumson has right to borrow but it is Olson's to get over with regard to the cost Toulumson to give us a more definite letter as regards the title.

114.^s Olson Thos. Final contract was submitted here in writing many interesting interests. Brothers were J.A.E., J.K. Wilson, Batchelder, C.M. Ryman, Elmer, Hutchinson.

suggested that we do not want Hutton.
 As he is not a stockholder in the
 Company and he is always here to
 be consulted. We should either make
 it five or put in another stockholder.

June 17th 1886
Shipments for June. Dynamo. 26
 Motors 5
31

Billed at \$1,328. or \$1.019 per day.
Municipal System. Attended a meeting
 at 65 St Ave to remedy the work in
 this system; appointed a committee of
 Andrews, Sturges, Howell and
 Parker to see that the proper appara-
 us was made. Document -

1. E. K. T. of Dynamo
2. Tolls &amp;amp; variation of lamps
3. Jinks paper put out
4. Johnson put out lamp
5. Lamps on standard iron board
6. Put out wires on board

117th 7. Rules for Municipal Lines.
Orders on our books today

Dynamo. 87
 Motors 41 = 168.

118th First Topeds. Sime made a success full
 run with the first topeds of the year.
 Had it accepted. 10.5 miles was the
 speed run.

could not be done until tomorrow or next day

125*

United Cotton Shops. June 24 1886.
Met and made Lin-
a director in place of Klein -
Isolated Co, and Lytle Co met and
authorized the taking of the business
of the Isolated Co by the United
Cotton Shops. Stephen May has
said but we agreed to take 65
c^t Acorns

126*

New Shops. June 25th 1886.
DeLamer, Linsman, Insull,
Trow, Geo Place and myself met at 121
Chambers Street N.Y. today and I
gave Geo Place check for \$10,000 - and
he delivered to me the deed for the
property known as 110 Queen St.

127*

United Cotton Shops. The board of directors
was again changed today - I am -
Sub. of Ed C. Clark, S. Bagman,

128*

F.K. Upton, & Chas. Hatcher
Grain Went to Staten Island & see Buffalo
Sells share with Chas. Hatcher family -

129*

Williamburgh Block.
Wm. H. Pan Hunt today at Hornetown
and arranged to turn back the
plot of land & hunt for a considera-
tion of the cost of clearing etc.
about \$100 -

135^s Laylor & CoJune 21st 1886Statement of Laylor & Co made June 9th
after 2 month run in as follows:-

Bill. receivable	\$2,381.81
" payable -	3,966.04
	\$1,584.23

Paid in bank \$1,191.60

Dish 1,125.00 \$3,596.60

over & above balance \$4,012.34

136^s Condensers.June 29th 1886

Delivered first Condensers to Sale

to 91 & B Y O Hamshurst to day

41 & 2.

137^s Milan

Lieb here from Milan

138^s Detroit FeedersSmall telegraphs for
Callender kids (P10) sell in for feeders
B. & S. telegraph then that they must
have armored cable or the Light B
would not pass it.139^s Endorsements.Endorsements of B. M. W.
to Geo Place for \$2200 - Due Oct 31st 1886.140^s Lamp factory

In of lamps made at Edison Lamp Co

1881 34,594 sold \$3,141.00

1882 202,689 " \$9,230.00

1883 333,244 " \$139,484.00

1884 340,043 " \$161,863.00

141st Sly. B. Meeting.

June 20 1886

At the board today we appointed a Committee of three, Chinnick, Johnson & Foster to agree and act on what shall be used for the two up-town districts of all unanimous. Then give out the Con-tracts

142nd Discarding Old wire (Amateur) July 1st

Found on the Prague amateur that it was almost impossible to get it connected up without a wire owing to the oblong & flattening making it so easily damaged. Still either coming will plan to use some more pointing than old plated wire. His belief is in a great measure the cause of so much trouble lately on our amateur.

143rd Inter. Station.

July 3rd 1886

James returned with order for tubes from Schott after a desperate fight with Callender & Co.

144th Greenwich

July 6th 1886

Have sent 4' + 5' at Johnson's at Greenwich. It went up 3' in Y. at 10 am. today.

145th Prague's Patent Patent

July 6th 1886

Received 'Prague's Patent' of working of Prague's first patent dated 18 Dec 1884 from Standen. Patent number is 161,009 and corresponds to American No 295,454 taken Dec 11, 1884.

146th Taylor & Co.

July 8th 1886

Meeting of Directors - 2% dividend -
Remuneration for Taylor for extra work
etc.

147th Occidea & Hunt in a firm in the new
Covering department to organize it. Shall
advocate for me.

148th Conpound machine



Making this on a 12. 14 order
Dyer & Seely to take a patent
for it.

149th Edison E. Light Co. moved to office in
16 Broad St. Third floor.

150th United Edison Mfg. Co. July 10th 1886

Had a meeting with Bergmann & Hirschmann
in regard to Klein being on board of directors
after we had agreed that Liver should replace
him. Got the resignation of Klein & his
understanding that Liver should go on a
gain.

151th L. C. M. H.

McLean returned this
morning from a visit to Shamokin,
Luzerne, Schuylkill & Harrisburg, Pa.

152th Callender Cable Co.

July 11th 1886

Had a meeting with Edison & himself on
talking up the Callender Cable & selling
it for feeders. Callender offers to give
us 10% better than to any one else & not
to bid on Edison Electric work. Edison
wanted more guarantee, too untried.

Insist to ask for more substantial guarantee to guard against possible failure

1533 Money loan to R. C. M. W.

Edwin promises to loan the Com. W. \$25,000 out of the \$45,000 he has borrowed when we pay him back by raising a mortgage on the Schenck & Co. buildings -

1544 Salaries of R. C. M. W.

Week end July 5. 3 PM. \$4,500
" " " " " 10 " " " 1600

1553 Callender Cable

July 15, 1886

In an interview today with Lussell the C. agreed to give as security for their good working of their cables a guarantee of their Company accompanied by a deposit of 20% of the value of the contract in good R. C. securities in the hands of third parties pay Drury

156 R. C. M. W.

July 16, 1886

Druckard M. Loan today.

157 Bouquet patents in France

July 17, 1886

I gave C. K. \$1,000 note at 3 months in payment of what he paid for patents in France. He agrees to assign 1/2 his right here to us when he gets a specific assignment for France from Bouquet.

158 Western Station

July 19, 1886

We had a meeting at 16 Broad St. & discussed

The dynamo and conductors for new district. Chas. J. S. E. Chumock, Satchell, Pat. Andrews, Russell were present decided to have 125 volts & 500 amperes at the dynamo

Edison proposed having 40 some steel altogether & running feeders to heavy centers & then making mains at each place. Same size as feeders, other mains of less size

There was much discussion as to whether it is advisable to use cables as feeders

Chas. J. Chumock says it is better to have no joints & if a pick cut into one cable it is only one cable that is damaged.

Edison maintained that the cable whilst being electrically superior to tubes cannot be as good & well protected from mechanical injury. He illustrated his remarks by showing that all faults to our underground system were mechanical and said that unless you drew the cable through an iron tube it would not be so satisfactory as an tube.

I claim that in large cities like N.Y. it is difficult to lay cables of large diameter and long lengths owing to so many other pipes being run in the ground

189. Apparatus.

July 21, 1886

We are compelled to bind and japann our
 apparatus after the first layer is on and
 we are now doing this. The binding is
 afterward made of silk tape & three
 thickness of paper (oiled) is past between
 top and bottom paper.

160. Long Beach.

July 26, 1886

Came in today from Long Beach. Rosa
 Emma Rosa & I have been here since
 June 11th.

161. Union Station.

Meeting today of C. & O.

Light B² engines & locomotives and
 boilers for Union Station. Emory was
 here also. Got here late.

Low speed condensing engines were ad-
 vocated. The picking in the light &
 is obviated by making our heavy fly-
 wheels.

162. Dynamo.

Finished new wood board
 for 12 dynamos & commenced to make
 them for Central Station machine, now

163. Edison United Mfg Co.

July 27, 1886

Meeting of directors today. Edg. Hutchinson
 Bergman, Upham & B. A. Phelps present also
 Secretary Klein. Business and adopted
 Hutchinsons plan of contract with Edg.
 & method of doing wiring by Holt Ber.
 taking job & sharing profits equally
 with E. U. Mfg Co.

Edg. informed the meeting that Mr. Deol. C. would throw off the first cost of the lamp. His profit on each lamp is just met at the time. Payment to be made by note at 90 days without interest endorsed by the other two companies, that is a note given to the C. M. W. is endorsed by B & C & M. C. Lamp Co. & vice versa.

164. Prague Victor Stock

Prague told me that he had sold 50 shares today at \$525.

165. C. M. W. Finance.

July 29th 1886

Rau Schwarzwalder Mass. Germania Bank this morning for loan of \$15,000 \$10,000 now and \$5,000 15 Aug. if we want it. Offered note of the C. M. W. with J. A. C. endorsement. He said all right, we make note & present it tomorrow & it would be acted on.

Went out and got J. A. C. endorsement.

166. F. K. Upfen died with an aneurysm.

167. Lamps.

Edg. said some today that he had found out by spectroscope that vapors of mercury condensed on the inside of the lamp when cold & apparently there was a very high vacuum, but when turned it into vapors again & caused the vacuum to be exceedingly low so that there was a good medium for the carrying action. He said he had

been able to arrest the mercury by putting a water jacket round the tube leading to the pump & freezing same continually. Any odor of mercury passing towards the pump would be caught & immediately deposited as mercury on sides of glass.

168^o Finance. Am. M.

July 26 1886
Germania Bank discounted \$10,000 for the Am. M. today -

169^o Consolidation of Shops

Chas. spoke this today about consolidation of shops. He said that had been talking the thing over at S.M.T.C. and he suggested as a means of bringing upon a thick wall of consolidation that we try to work it so that L. & C. could not get the contract it wants, but that the same thing should be given to the consolidated shops.

170^o Armature fault.

Found out a 'big' in jappanning. For some time past we have noticed a number of armatures have heated up above 150°C. We have generally supposed have heated because of poor insulation of bolts, but I find that in the heating furnace the slots get red hot and the armatures that are close but must get hotter than the others in the hot room, the

is so bad that I occasionally carbonize the paper between the plates, thus staining the plates & heat abnormally. Have given orders that they shall not go in oven at all but receive three coats of quick drying varnish before being wound.

171. ¹ Schenectady Supr. Aug. 3rd 1886.

Spent the day here - visited Westinghouse & Schenectady Loco. works. - Our work progressing rapidly.

172. ¹ Agreed on 'heads of contract' for contract between Callender & Co & the Edison Machine Works.

173. ¹ Edison Station. Aug. 4 1886.

We had a meeting at C & H's office & decided on the engine and boiler to use in the 20th Street Edison Station. Emory and Edison were here. It was decided after much discussion that for this station we had better stick to high pressure fast engine (not exceeding 600 horse) and only two dynamos on an engine instead of four as proposed.

174. ¹ Callender Contract

Edison read over the contract and initialed it for the C. M. W.

175. ¹ R. Dyname. Aug 5 1886.

We have him having lots of trouble with R armature lately and I have

that they have evidently got off in the winding somehow. The R is 44 blocks & is one wire 3 times around and then one five four times around. It should be wound so: ~~to be correct~~ namely 3, 4, 3, 4 etc. instead of which it has been the habit to do so.

~~to be correct~~ which makes the measurement show 3, 3, 4, 4 at opposite parts of the armature all between showing alternately 3, 4. The effect of this on an armature is to take out the commutator similar to a bad connection between the wire and cups. I have ordered all R^o 44 din. that come in to have top layer examined & if necessary changed at our expense.

176: Wire coming

Got our first order today for outside wire coming. 5000 yds. of Flaxed cotton flexible from Bergmann.

177: Cable loaders

Aug. 6 1896
Met C. H. G. Chinnock, & Carter in E. H. J.'s office. They were discussing the merits of our armored cable sample and the opinion of all was that the utmost attention loaders should be of this style.

178: Hand rope done

Saw Mr. Cook today about payments on the Rockville. He acknowledged

his liability as far as he had signed the contract and said as far as he would have it fixed up -

179. Ralph Johnson Aug. 7, 1886

Took family to Taylor House Lake Johnson N. H. & stayed with them 8 & 9th & 10th. Arriving home 11th P.M.

180. Ans. Illg. Co. Aug. 11, 1886

Meeting of Edison Ass. of Ill. Co. at Eng. Beach Hotel. Sent them to represent the C. & M. N.

181. Met Mr Brewster of Rochester & spent the evening with him at Hoffman House. Dined on Rochester at 3 days for 4 \$2.50 at his request. Fly agree -

182. Callender Contract Aug. 12, 1886

Creusi, J. Deane & Callender met at Deane's home to consider contract and talk over the workings.

183. Patent Received my French patent for annuitate crinoline from Hor. & S. J.

184. Johnson Lake Aug. 16, 1886

Went up on night of 15th & arrived back 8 a.m. the morning.

185. Callender Contract Aug. 17, 1886

I sent to the Callender Co. the heads of agreement in the contract to be made by & between the C. & M. N.

186.5 Elm St.

Aug 19. 1886

Belgeman and Hutchinson visited
Berkley Shop to see what to wanted
for repairing armatures. I went with
them.

187.5 Fishing

Aug 22. 1886

Fishing in Schuon Lake this morning caught
a Bass 2 1/2 lb. Mr. Hamlin and Eliza
went up with me on the night of the 20th
and intend spending a week.

188.5 Edison's House

Aug 25. 1886

Spent the evening at Edison's House at
Orange - Family away - Inval here -

189.5 New dynamo

Have started to design a
new dynamo for cheapness. Edison wants
one to go into motors and
plating machines.



190.5 Dynamo 250 Volts 200 Amp.

Regular 420 armature, field etc + wind on
Magnesi 440 lb. 16 (AMG) (065") sea on each
core. This single pot. is changed to 77
after test of it.

Armature 13" diam. 24.5" long.

12.5" at base.

Winding 9 "0.1 (165") twice round
and 50 blocks. Vertical winding.

Est. 1886.5

1886.5

1921 Edison-Hopkinson Machine

Just made about Jan 30, 1882.

Length 56" x 36" x 60" high. Weight 3534⁹

Arm 40 bars, 55 ldk, 200 ampere,

Magnets 1.34 ohm. Arm Res. .009 ohm.

Speed 900 — Elec. eff. 93.1 %

Arm magnet 2.4 % — Arm 4.5 %

Heat: — Arm Magnet Arm

After 1 hour 17° c 33° c 46° c

" 12 " 20° c 33° c 84° c

" 24 " 19° c 33° c 46° c

His test with 275 ampere

total output 13,450 Watts

Weight per Watt 126 lb.

1921

Sept. 1, 1886

Just returned from my vacation at
the Adirondacks Aug 27. On 29th we
took a passage from Johnson Lake
& visited Bede's, Lake Placid,
Lower Saranac, On Lake Cham,
Burlington & Elizabethtown, in all
8 days.

1934 Sprague Francis Patent

Receipts for 2nd annuity 3 to Y. &

Receipts for " " 9 and 10.

received from J. W. F. Leedy.

194³ VacationSept 14th 1886.

Spent 11, 12 & 13 as usual at Schron Lake. Sunday we all went to Pyramid Lake. Mrs. C. H. G. & children went up also with me.

195⁴ Edison W. Mfg Co.

Meeting of board of directors - Business -
 Call of 2 5% ordered - Advancing -
 E. W. Mfg Co. have New York vicinity ex-
 clusively for sale of Bergman fixtures -
 Also all isolated business sales - W.C.
 Livingston was an agent for Kammur must
 not be appointed until Hutchinson has
 seen him - Hutchinson authorized to
 hire Hubel -

196⁵ Sprague meters

Received order 200 ahead Hubel 10 H.P.
 meter & drawings - He furnishes
 castings

197⁶ Introduced to E. W. Arthur's Club.
 Knight for membership.

198⁷ Sprague Meter Prices

21	2 H.P.	\$135	F.O.B. New York
3	1 1/2 "	240	(And 30 days or 2 1/2 "
6	3 "	350	10 days
10	5 "	500	These prices include
15	7 1/2 "	650	regulators.
20	10 "	800	

149. Sprague 10 HP motor

Received order to make one from his
Castings.

Style of Castings \$41-



200. Truss I left off the Truss on Aug.
4 & have never felt the want of
it since but on occasion Nov. 1892. O.S.

201. Sprague R.R. Motor (Sept. 16 1896)
Sprague tested one of the motors for R.R.
It has an armature diam. and runs
in the field. Kick. He stored the
first armature.

202. Schoon Lake (Sept. 22, 1896)
Got back from Schoon Lake for good.
Capt. has spent three days here &
both families came together.

203. Sprague R.R. motor.
They are getting the truck fixed with
the two motors for trial tomorrow the
23rd.

204. Rockwell Central Station
Thurs. left for Rockwell tonight & in-
spect the work & see what can be done
for Detroit.

205. E. & Legie Co.

Sept 23, 1886

Making today. Decided to immediately appoint additional counsel & vigorously prosecute our patent suit.

206. Compound dynamo.

The experiment that was spoken of on page 78 of No. 106 was tried today. It was the one shown in fig 2. - I feared possibly by giving no spark whatever variation of load occurred.

207. E. & Legie Co. New Station

The addition to the Pearl St. Station was made today and Mallory is here to start the dynamo & have them running satisfactorily. They will run tomorrow.

208. R. T. & Co.

Parquet made a test today with the new motor & after a few runs he found out the resistance box.

209. Keatinge.

Sept 25, 1886

All went to A. C. Goodwin's in "Cotta Jack Pheland".

210. Silver Service. Bought at Lippincott's.211. Transformers.Sept 27th 1886

Mallory & I signed a contract on the 27th of Nov. - I, Henry E. Mallory and John Satchelton to whom Henry E. Mallory assigns a half interest in patent do hereby agree to divide all profits that may accrue to either one

or the other on sale of patent relating
to Combined Generator and motor
Application for which was filed Mar 11th
1886 or on any apparatus made
under it Oct 30 1886

212. Spillage Motors

Order to make two $\frac{1}{2}$ H.P. & have them
done by Oct 15. Same style as the
3 H.P.

213.

Walter McCutty. Went to hear him
speak. Subject the 'Cause of
Inebriety' Oct 4 1886

214.

Moving. Oct 6th 1886
He moved the Shafting Department
today to Schenectady N.Y.
Also contracts for new buildings up
here.

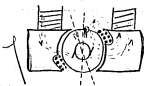
215.

Compound Dynamometer.
In continuation of our experiments men-
tioned at 106, we have found out the
following: It is not sufficient to demagnetize
the iron of the armature & keep a non-
sparking magnet, as by far the larger part
of the spark comes from self-induction.
The arc is produced by running an
armature alone & passing a cur-
rent equal to that used through it at the
same time. This sparked terribly. If a
coil is passing under a brush in-

at one time it must have no current circulating in it & the next instant it has to take a strong current this is entirely independent of the other things that go to make a machine speak, and in our machines with such very strong fields it is one of the most important things.

When therefore we made the coil like this to go round the outside of the armature we found that it had to be placed in a different position from what it would be in if it was only intended to set the pole back.

After its distribution in the direction of rotation. We found it must not only set back the pole but it must furnish itself the line of force necessary to cut the neutral coil & make it generate current whilst going under the change of polarity. We find then that the actual neutral point is a little behind the non-sparking point always. The last thing then how the coil works, the regular line of force are passing from left to right, & the coil picks up new lines in same direction as the others but around itself in such a manner that they cut



the coil that is under the brush and generate sufficient current in it to prevent the brush from sparking.

216. * Edwin

Oct. 4, 1886

Edw. Edwin died here tonight. He told in a story of J.O. C. that I have not heard before. Samuel Edwin had a daughter married & living in Sandusky, O. & Sam at 124 Main had been there. His father went to fetch him home & whilst there had quite a lot of boxes & trunks to ship's house with him. They were at the station & all the goods were on the platform. Whilst they were engaged Tom hunted round and found a marking for the brush & went & directed the packages in a firm & plain manner in fact everyone was astonished at his manner. That the station master who knew had said he had not a man around the place that could do it so well & offered him (if he would let him stay) to pay him \$10 per month & board him.

217. * C. V. King

Oct. 5, 1886

At a meeting today the policy of the Co. towards agent was agreed to be changed giving him 1% on all sales no matter what since they are when exceedingly low sales are to be made the agent always to consult.

218. Edison's Experiment

Oct 9 1886

Amature made in principle of 66
 given me (ask May 6) Edison was kind
 today. I was a #8 amature took it
 our field it sparked so bad that we
 could not turn it. He made an-
 other field that allowed
 more than 60 the dis-
 ampere to be given at
 40 and 60 turn res-



It ran about like a #8 regular but the
 bolts only being about 80 instead of
 125. He ran both ways but it was
 just the same

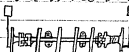
219. Amatures.

Oct 10 1886



In 215 I spoke of an armature
 revolving & a current
 being passed through
 it. The field magnet
 being employed. I no-
 ticed that the brushes sparked badly.
 I then saw certain causes for it which
 I think were not all. As will be seen
 from the diagram the armature was
 strongly magnetized & at the point
 where the brushes crossed the pole is
 strong & the wire is cutting the changing
 line of force

220. Reading Out Station Oct 14. 1896.
 Visited this station today. 2 "20 and
 2 "10 driven by side engines one to
 each pair. One light plant also
 putting up driven by two side
 engines one at each end of shaft
 with a coupling wheel & run when
 one or the other. And move when one
 or other in wheel in
 motion.
 Very fine station. Just
 ready to start. Met Mr. Mansel the Pres.
 & Mr. Ryder the Secy.



221. Wilkesboro Station Oct 15th 1896
 Visited this station today. 4 "20 & 2
 "10 driven by side engines. Large
 one lamp plant besides.
 New Pros. Tunnel

222. Albany Oct 16 1896
 U.S. Express Co plant 1 "12 run by
 a safety power 9x12 50 H.P. This
 plant runs the 8x14 depot & will
 like by get the 24x24 & 11x11 depot.

223. West Passaic & Co of Albany
 1. machine "12 & 59 working
 very satisfactory. Can be excellent
 condition. Run from counter shaft.

224. Myers Dry Goods Albany
 2 "10. Driven by Birmingham P.S.
 engine 12x18 & 2 pulleys.

good condition. The ammeter had
been burnt out here but outside
out nothing relative to how it was
done. Specimens are had all the
good.

225. Schemelady

Oct 16 1896

Allen T. visited Schemelady
all tools for Hasting department
ready & working.

226. Banks

Oct 17 1896

Went & saw Mr. Sters on disbursements.

227. C. & Light Co.

Had an interview with Mr. Hasting
& Mr. Subject. How to remedy the
burn out which occurs in under-
ground taking. He decided that the
Machine Works must have a work
& put whatever current in that
they want to test the underground
system.

228. French patents

Oct 21 1896

Received from Syer and Selby my
French patent for accumulating & building
up commutators.

229. Isolated Co.

I resigned today from the directing
of the Edison Co. for Isolated Lighting.
It is intended to give this Co. work the
Edison Electric Light Co. and in order
to do this the directors should not be

the same in each. The number was also changed to 5 instead of 12.

280. Sprague Motor

Oct 22, 1886

Meeting. Klosser, Chas., Seigman, J. A. E. & myself it was agreed that Est. P. would accept the following for the future and endeavor to make Sprague accept the same:— The C. M. M. Co. do all the ~~subcommencing~~ manufacturing. Sprague have an experimental shop here at New York. M. to furnish him with everything in the shape of materials and finished parts at actual cost without any profit at all & so

281. Edison Electric Light Co.

At a meeting today we adopted the report and sent it to stockholders meeting.

282. Amature experiment

We tried the experiment on 20th of Oct 1886 to find out how much spark was due to self induction. The amature was run at ordinary speed and a full current passed through. (No field on this at all). Another coil was run round article fixed & the same current passed through it in the opposite direction. This coil had the same number of ampere turns on it as the amature and was placed as near to the amature as possible. Then you neutralized the magnetism

237. Schwaetach Nov 2nd 1886
 Took wife & girls up here - stuck in a
 fog on River so had very little time.

238. John C. McGuire
 He Ben W. makes a contract with Cha-
 T. Porter McGuire work - La the hands
 of J. C. Tomlinson to be away.

239. The Ben W.
 Sales for 6 months

April	\$41,265.28
May	24,789.49
June	42,065.20
July	46,984.00
Aug.	59,998.66
Sept.	68,443.11
	\$310,545.74

Average: -
 \$51,754.60

240. Corn Husking Machine Nov 4 1886
 Fixed Old Elevators Monday and today
 & see the Corn Husker at work

241. Iron of Parker. (Edison's)
 Made a "H" armature for S.A.E. in which
 each bar before it reached
 the commutator had a
 resistance between it and
 the commutator of about
 the total resistance of the armature, thus
 making a high resistance instead of a
 short circuit when closed by the brush
 When running I noticed that was always
 a spark when a heavy change of load



but it did not seem to be a cutting spark.
I am trying the following to see if it is
better than the ordinary machine -
A regular #4 must be run and every
15 minutes the load must be varied
say 20, 20, 50, 10 amp and so on for
two hours changing and setting the
brushes as soon as convenient after change
of load - then see how the cuts the
commutator - Afterwards take the
Special Edison #4 and do the same
with this but not the brushes permanently
in the effect on both.

242. Underground Cond.

Nov 6 1886

Met Mr. Hunt on at shop & made a
similar arrangement in Lening that
we made with Marx - that is always
5% of our price for them -

243. Upon

Left for France today with full
power to buy to some arrangement
with the French Companies

244. Born husker

Arranged with Mr. Haselton to have
the Miller Born husker to our shop du-
ring the experiments

245. Transformer patent

Received from Dyor and Lang Oct 25
the patent for transformer of Miller
assigned on half to me. 50% each

206- Schenectady

Nov. 8th 1896.

Went up today - Building progressing - Working
 progressing slowly - returned at night
 206- to C. M. N. statement for Oct. 1st

		Acct payable.	\$229,751.96
\$96,789.69		" Materials	
197,417.12		Labor and Materials	
33,304.07		Raw Materials	
7,584.01		Coal	
225,503.79		Mach. & Tools	
4,717.95		Wm. Ins. Leds & Off	
4,649.47		Spurs & Fasten	
23,557.09		Patent Gls	
181.64		Mining Gls	
2,929.57		Wares & Tools	
		Int. & Advances	922.65
24,450.00		" " Stock Gls	
		" " Loan Gls @ 6%	2500.00
237.85		C. O. Mfg & Consumpt	
2570.00		" " " " " " " " " "	
		Profit & Loss	65015.13
59,724.21		Real Estate & New Bldgs	
11,462.45		By Laws Standardizing	
4,957.26		Insurance Gls	
138,400.00		Goodwill, Patent, etc	
		Capital Gls	750,000.00
		C. O. Light & Labor Expense	33,333.33
9,824.01		Municipal Light Exp.	
1,051,593.07			1,051,593.07

240¹ Patent

Nov. 15 1886

Received from Oyar & Reley, assignees of Patent in
Mellin's Food Patent "200 777 filed May 1886."

240²

Nov. 20 1886

Spague & R. W. Weston Co.

Meeting of Stockholders today - Decided
 to increase Capital Stock from \$100,000 to
 \$1,000,000. Five hundred thousand to be
 raised & Spague for Contract for 5 years
 and he to divide it 50-50 with present
 holders of patent. Present J. C. Coulburn
 & H. S. Spague, Ruff-Saunders, Dr. Powell,
 & Co.

250¹ & C. Light Co.

Samuel went to Chicago Friday
 morning in regard to the Street View
 plants with power to drop our price
 below the shop profit. He gave
 them 20% below list for first two
 installations

251¹ M. Co. Contract

Nov. 24 1886

Edison, J. Samuel, Porter, & Coulburn
 met at Edison's laboratory at East
 Newark. Discussed Porter Contract
 & came to a conclusion satisfactory
 to all concerned. Coulburn instructed
 to make new drafts of same and
 get ready for signature

253. Thanksgiving

Nov. 25 1886

Shop all day. E. & J.'s house at night.
 Bought candy. Billed 20 lbs today.

253. French patents.

I wrote Lipton on Nov 25 & sent him my
 patent for Communicator and for circulat-
 ing apparatus and told him to sell them
 for anything that he could get over and
 above the patent cost. And I would divide
 equally with him whatever was left
 after deducting \$250 for his two

254. Construction Co

Nov. 25 1886

E. & J. proposed a Construction Co in which
 J. S. Morgan is president. \$1,000,000 Capital
 with a contract with Light Co.
 Co. formed on a basis of 50% Water
 30% to Light Co and 20% to E. & J.
 Co.

255. ExperimentingDec 1st 1886

A. S. at shop this morning. Told
 me about his experiments and
 wants me to arrange to do them for
 him, & leave E. & J. as much as
 possible to chief & come with him.
 This I told him would be fatal at times
 we must try and get him out of the
 way.

206th Meeting of Directors & Comm. Dec 3rd 1886.

At Edison House. Special made
Secy. & Quare. Ratchels made Vice-
Pres. & Genl. Mgr. - Resolved to buying
of Dehmer & Co. ship - the making of
Grazing & Cattle & horse contracts - also
contract - authorize the disposing of
William - hugl property - etc etc etc

207th Jan 11.

Dec 4th 1886

Sam Isolated Co. Grazing Co., United Co.
I decided to move to Dehmer & Co. now
just as quick as it could be done -
We shall therefore try and have the
whole thing moved and running here
by Jan 1 1887.

208th Jan 11. 1887.

Dec 8th 1886

Met Johnson, Carter and Vail at Thomas
house & decided that we must have
better service and more of it out of Mr
Hutchinson - He difficulty at present
is that it does not take initiative
enough to go ahead - He is mostly
on fence (although I did not think that
he needed much pushing) we ought
to meet Oliver and lay out the policy
direct Mr H. & follow it out.

209th Jan 11. 1887.

Dec 5th 1886

Errol goes to Buffalo tonight but
Carter & try and get Gorton (who must
them here) & try out the N.E. C.A.

at a reasonable price and so get their territory back into the hands of the E. & L. Co.

260: Contd.

See 10th 1886

Signed bond for making R.O. Austin house plant with C&G, Magas, Bergman, Chinnock

261: E. & L. Co.

See 9th 1886

Attended meeting stockholders of E. & L. Co. and voted for consolidation with the C. Co. for last night. Vote unanimous

262: E. & L. Co.

See 10th 1886

Met Hutchinson, Bergman, and C&G, at 36th St. to discuss the policy of the E. & L. Co. Resolved to meet each Friday night until the affairs of the C. Co. are in a better condition -

263: Isolated Co.

At a meeting he week it was unanimously voted by the stockholders to combine with the Edison Electric Light Co.

264: E. & L. Co.

See 16th 1886

Meeting to discuss the unsettled accounts of the United Co. & the Isolated Co.

E. & L. Co.

See 17th 1886

Meeting to meet the agents to arrange matters which they wish altered. Made many amendments & increased percentage to 15% instead of 12% as now. Appointed & introduced to them Mr. Connel the General Agent

260 to B. M. M.

14. Dec 18. 1886

Moved the office furniture books etc etc
 tonight by express to Schenectady. From
 this day the business is done from there.

261 Mailed Father \$50.Dec 21st 1886.262 +

Edwin, William & Stephen at my house
 talking up experiments.

263 +Dec 22nd 1886

Bought 25 B. B. Light C. Stock at \$1.00
 L. A. B. gave me 50 International R. W.
 Abigail C. stock

264 +

Dec 24. 1886.

Went to Bridgeport and Hartford today
 called on Billings and Spencer & talked
 ship business for us

265 +S. Dec. 25th 1886.

Schenectady N. Y. N. & Thursday 26th

271 + Moving

Dec 20. 1886.

Stopped all work at Goick & ship and
 also at 11 & 24 Bridge St. Brooklyn Saturday
 and moved everything out to Schenectady
 Goick & ship almost empty now.

272 +

Schenectady ship is now running and we
 are beginning to turn out work. On Jan 2nd
 we shall have 5 "1" & 2 "4" dynamo ready
 to test. New Balcon T. Wilson boiler is deliv-
 ered & will be put up immediately. Crane
 is up and will be ready some Jan 2nd.

FAILURE OF CHARLES H. RAYMOND.
LIABILITIES BY BANKRUPT EASY A MILLION-SOME
OF THE PREFERENCES.

Charles H. Raymond, dealer in Government supplies, at 504 1/2 St. Charles and No. 100 Bowler, and president of the Manhattan Oil Company, at No. 61 Broadway, made an assignment yesterday to James E. Oakley, of Jamaica, L. I., giving preferences of \$145,000. According to one of the Raymond's creditors, the failure came like a thunderbolt from a clear sky, though he said that he understood that one of the Raymond's sons were prosecuted a week or so ago. It is said that on December 17 Mr. Raymond used a suitcases containing his property, so the effect was that the "Yves" suitcases were not at his home. No. 61 East Fifty-fifth St., last night, and he could not be found either at the office or at home. The assets are not known and the liabilities are estimated at from \$100,000 to \$200,000. Some of the preferences are:

Manhattan Oil Company, \$114; George Penn Manufacturing Company, \$100; Rayburn, Newman, Wilson and Co., \$100; American Oil Company, \$100; and others. The total amount of the preferences is \$1,000,000. The assets are not known and the liabilities are estimated at from \$100,000 to \$200,000. Some of the preferences are:

Testing engine (large Brown) has been running. Phelps is putting up four windows - has lot of new hardware ready for work.

27th United Edison Mfg. Co. Dec 30th 1896.
 Made an arrangement to start man at 65th St. Ave. on repair (mechanical) work, also to supply them with extra armatures and parts.

Made an arrangement whereby we let Edison Machine Works buy from the Select-a-Co all its stock of Dynamo Armatures at a price twenty per cent below the ^{present} price of the new types and for armatures 25% below. That is call a 1 x 250 light equal to a 1 x 200 light and 1000 then less 20% - The Edison Co. Order the Select Co. with the amount and they are to take it out in machines for other countries - i.e. Ken to turn it over to the United Edison Mfg. Co. at same price as part payment of our subscription.

27th Failure of W. Raymond. Dec 30th 1896.

27th Edison very sick at Orange N. J.

Carried forward		123,317 43
204	E. Railway Co. of U.S. at \$15	3060 00
3	Bonds of Edison & Light Co. of N.Y.	
	limited at \$1000	1500 00
26	Shaw M. & Tel. & Tel. Stock at \$10	250 00
30	" Niagara P. & T. Co. at \$500	25000 00
	Niagara Water in France money	1506 06
	expended to date	
5	Shaw Edison Lamp Co. \$5000	15000 00
1358	" No Edison M. Works. \$100	135800 00
100	" Bergman T. Co. at \$170	17000 00
73	" Taylor and Co. at \$100	7300 00
100	" Ott Mulling Co. at \$1	100 00
1475	" Niagara Mining Co. at \$1	1475 00
5	" Niagara Canal at \$1	262 70
28	" Edison Et. of Niagara at \$1	0 00
100	" Pulverizer Co. at \$1	154 23
58	" Aluminum Co. at \$1	0 00
1500	" Niagara Soc. mining at \$1	0 00
5	" Monograph Co. at \$1	500 00
50	" International P. & T. Co. at \$1	500 00
Patent		
	Transformer	90 65
	Electroplate	115 56
" U.S.	Commutator	258 79
"	Automatic Insulation	285 14
"	Commutator in France	
"	Automatic Ins. " "	
"	" " " Canada	
		332,471 96

Carried forward	332.470.56
Patent: Communicator in Canada	
" U. S. Compound Syphon	120.00
Due from B & Light Co as 10% of what Oliver is entitled to	6000.00
Telephone Royalty received in the past	00.00
Telephone Royalty received in Canada	400.00
Patent in Camp - Johnson's Camp	500.00
Black	180.00
Due from Lamp Co as dividend	250.00
" " Lapham & Co "	219.00
	<u>340139.56</u>
Debit	
Mortgage on Meade Park House	3500.00

274¹ Edison - 8.4. Jan. 6th 1889.

Went up to see Edison tonight. He is very sick with pleurisy but is progressing favorably.

274² The C. M. R.

Got to Bangor up Jan 5th - Crane started doing work same day - Shall leave out about 4,000 worth of work in first week in Jan.

274³

Jan 8 1889.
- Sick in bed all day with a bad cold -

275¹ Endothic Marble Co.

Jan 10 1889

SEATTLE WASH.
A number of institutions of New York and States Island, including the National Marine Museum, the Marine and Naval Museum, and the United States Marine Corps, have been established in Seattle, Wash. The purpose is to secure better school and scientific material, and to show and preserve the same.

275² Up to & News/nn.

Meeting - Dividend - Extra corp dividend to repay amount stockholders for earnings -

275³ Propose C.R.T.M.C.

Attendance of invitation a meeting of board of trustees at which it was decided to sell 100,000 stock at 1/8 & 1/16 - as the law would not allow the sale at a low figure - Eff. T. S. to the Company was present & they have been the stock over as a bonus to the present buyers.

275⁴ Edison arrived this morning from Bangor.

275⁵ Edison still out sick at Bangor -

275⁶ Handled collection pictures at Christmas Hall (Bridg)

65 Return 224, 113 -

275⁷ Made Will -

Jan 12 1889

294. Geo Place & Co.Jan 13th 1877.

Attended a meeting of creditors at 121 Chambers
St Doane, Benson, Foss, Batcher -

Jan 14th 1877

Attended meetings of above again & had
assurance of Ed Van Buren that he would
assume liabilities.

295. C. B. C. & Co. Eugene Ore.Jan 17th 1877.

Held a meeting H. L. Bunting Esq., F. Sumell, &
myself, Upton & Bates present, Olsen made a
proposition to sell 5000 founders share (of which we
have 1700 for \$3000 then pay bonds at \$688 4/5
300 cash & a 10 year bond for \$500 leaving the
2700 founders share as security for the bonds.
This I feel quite sure will go through - Unless both
to deal for his claim against the Company.

296. J. M. V. C.Jan 18th 1877.

Delivered my receipt of French share to J. M. V. C.
and authorized them to sell at 9 1/2% & remit
the money here.

Delivered over to Olsen my three bonds of

C. B. C. & Co. Eugene

297. Olsen improving slightly all the time but still
a very sick man. The doctors hope to send him
to Florida just west in February.

298. Johnson & Co dined at Pillsbury's tonight299. Bought 35 Light Street at 1400.

300. Geo Place & Co After all no waiting Van Buren
would rather accept our proposition so make
one himself. Put our matters in Lindeman's hands.

294.^s Saylor Trust Co.

Jan 21. 1894

Saylor, Kneiss, and I decided to turn Saylor and Co. as a concern to stand on its own bottom. Put in a new capital, take out side work, raise capital \$50,000, pay dividend to stockholders of stock to represent the money invested, & put rest in treasury to be sold as directors shall decide.

295.^s Chadbourne

Went to see Chadbourne about my health.

Johnson very sick & has operation for his pile.

296.^s

Jan 26. 1894

Edison Lamp Co.

All hands struck work yesterday

On January 26th the workers of the Edison Lamp Co. struck in New York City. The strike was caused by the refusal of the company to grant a raise in wages of the men who work in the factory.

297.^s United Co.

Jan 27 1894

Meeting at Johnson's house to discuss relative positions of Hutchinson and Abbott. Also what shall be done with the Western Edison Lighting Rail Co. just been turned over to us by the Light Co.

298.^s Lighting Department of Light Co.

C. H. J. formulated a plan to submit to the Light Co. for a special lighting and standardizing shop & Co.

the first contract to get lots of current etc. &
be where the office of the light he can easily
get it.

299. Goose & Ship.

Jan 28 1871



300. L.A. Co. Visited L.A. Co. who is now getting
better & sit up all day. Satisfied on probable
increase of stock of Point Co. on some such
basis as I think it likely they would make
namely double the stock, pay a 50% stock
dividend & present holders, sell 25% of total
at about 100, this would give the whole
stock about 13% cash dividend over and above
625,000 in the treasury. I am not sure that
this is the project but think so. The Western C.
light has also got to be taken at same time also
this will modify it some.

301. The C. M. W.

Jan 29. 1871

Had to keep Sumner out of getting two of the notes
of Detroit Co. discounted and giving personal secu-
rity for it. Got it from Cole & have to arrange
it Monday. Jan 31. Got this & put it to
credit of the W. at their bank. Put up
as security & look for 1871 of Detroit Co.
and 121 share of light stock.

302nd Subway Commission Jan 20th 1897

THE PRICES OF SUBWAY TRANSPORTATION
The Board of Finance of the City of New York
has the honor to acknowledge the receipt of the
report of the Subway Commission, dated the 19th
of January, 1897, and to express its appreciation
of the efforts of the Commission to secure the
lowest possible rates for the transportation of
passengers by the subway. The Board is of the
opinion that the rates proposed by the Commission
are reasonable and just, and it is recommended
that they be adopted by the Board of Finance.
The Board is also of the opinion that the
subway should be operated at a profit, and
that the rates should be sufficient to cover
the cost of the operation and to provide for
the maintenance and improvement of the
system.

Sublime
Sunday
Jan 31st 1897

303rd To C. B. W. Jan 31st 1897

C. B. W. and I visited Carson and he agreed
to the C. B. W. raising \$700,000 on its own stock
to use as working capital. As he got from
the C. B. Light Co. and they to have the option
to take the stock after a year - C. B. W. and
I to work out the details.

Feb 2 1897

304th To C. B. W.

Mr. Carter and I went to Menotomy to see
what condition we were in for manufacturing
sugars.

311th To C. B. Light Co. Feb 3 1897

Making of the Light Loan - decided to
increase the capital sufficient to take in
the N. B. Light Co.

Got the assurance of Mr. Carter that whatever
was done in the Light Co. this should be
notwithstanding that should improve the
reputation of S. B. W.

305th Klamath Co.

At a meeting of directors on Monday
of 31st it was decided to pay dividends.

at the rate of 1% per month commencing
1st March 1884.

306¹ Taylor and Co.

Feb 5 1884

at a meeting of board of directors it was
decided to increase the capital stock
from \$25,000 to \$50,000

307⁰ Simons Gate

Reuben Johnson & I met Willard in regard
to Simons' Cables at his office. Saw
his samples & found them the same as we
made. He decided afterward that
we were not obliged to use his process and
probably could get along equally as cheaply
but it was good policy to treat with him.
I think we could buy machinery from
Simons & a man to erect it & begin
immediately

308⁴ L. A. Co.

Feb. 8th 1884

Saw him at his house and found him
much improved & ready to go away
tomorrow night to Florida.

Spoke to him a proposition from the
light to about raising \$100,000 for C. M. W.
which was light A to sell \$20,000 worth
of the stock & a party for \$25 per share
on condition that he have the stock
\$20,000 at 6%, then light A to
loan C. M. W. \$100,000 for 12 months
at 6% & put up \$20,000 Machine
made stock on option for light C.

to take it at par any time in the time of loan - No dividends to be declared during loan.

Let Edman we could use the \$200 (about) share of Light Co stock we now have for same purpose if he would sooner instead of paying it as a dividend. He preferred to sell his share of Edman Ill. Stock & loan the money to the C.M. Co. which he authorized us finally to do.

309^d Edman (Ex. Light Co. of Cuyahoga Riv.)

Meeting today - Edman resigned presd't.

& as a director - Batchelor appointed presd't.

Acting Presd't in regard to sale of founders

share & receipts for new trade Cils.

paying bills & buying bonds abroad.

310^d Law, Ill. Co.

Rockwell Feb 9th 1887

Attended meeting of the Am. of C. Ill.

On for ten days 9 & 10th Meetings been

spotted & well attended

Thursday Feb 11 1887

311^d Frances Norton Prof. Fajipoko & 40^d

Occasional name from Rochester and now

& Schenectady & visited the Park

Friday Feb 12 1887

312^d Met Mr. Benson in Hamilton of the

W. O. St. & about 45 names for the

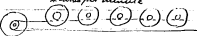
main building of Broadway Ill. of St.

3/3

Feb 12 1897

Disc painting

The machine for coating
discs on Edison's plan has been made &
works to a claim

at 1000 per minute


It is at
Helmstedt.

3/14

Laylor Co.Feb 14th 1897

Meeting of Laylor & Co. buying 9

3 lbs. After which Laylor & Co. went to

Smith & Woodward & closed the arrangement.

3/15

Accumulators

Feb 15 1897

Meeting at E. G. office with Madden &

Quinn on accumulators as applied to

lighting - same etc.

3/16

Runs of Kenna here

Feb 16 1897

3/17

Feb 17 1897

Dined with C. H. J. at his house with Frager

& Miss Fujishika & Mr. Yamana. Indeed, I

was happy.

3/18

Feb 21st 1897

Sentified delay in interpretation. Handed paper

case at Duncan Clark's place. It took

Haw. described machine we made

in 1895 at Ward St. & what we use

at present

310^s Hunt to Schmetzky & Feb 22 1887
returned at midnight.

320^s Interference Case 24 Feb. 23 1887.
Testified in Ward case at
Duncan Court & Page 32 Bank Place
2 p.m. & 4 p.m.

321^s Callender's ship Feb 26th 1887
Visited their place at Newark N.J. with
H. Callender & S. Sumner.

321^s Siemens' Cable.
We talk him for with W. Kiland has been
to say Siemens' cable of 2 1/2 or 3% on the
price the E. & W. sell him at.

322^s Started for Fort Myers Florida at 9
p.m. Feb. 1st 1887

Arrived Jacksonville at noon - Feb. 3rd 1887
Left again Feb. 4 for St. Augustine
Hunt down Boklanaka. Feb. 5th 1887
over to Silver Spring.
Silver Spring to Punta Gorda Feb. 11th 1887
Punta Gorda to Myers. Feb. 14th 1887
Fort Myers from the 1st to the 21st 1887

323^s Klagner's trip Myers 19th Feb 1887
Since the P. of present month I have
worked making experiment on a new
principle of motor for Edison - the
principle on which he works is

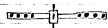
as follows: 'The production of a distortion of the line of force in the form of an armature by heat' and the rotation due to this distortion.



When the armature was made with a number of discs mounted to turn on a pivot and the sections heated at A+B so that the magnetism was instead here the line would be displaced & consequently it would endeavor to turn. In the disc form with holes to facilitate heating and cooling the expansion & contraction was great & caused a ruckles which made the wheel untrue & consequently gave bad results. He made many kinds of armatures:—



ring & spiral edgewise. —



ring & spiral, round wire —



Flat discs perforated



Flat discs and slotted radially & tabs can expand & contract better as well as heating and cooling quick. The best result as far as got with



o hat all studded with pins
like a circular brush - the
form allows of quick heating
and cooling and does not allow expan-
sion + contraction to affect its shape

324

En route 21st 1897
Left Memphis for Punta Gorda, Mississippi
+ Jacksonville and from there to
New Orleans on 24th
New Orleans wire 29th Mch
+ saw Central Station, Custom House
+ other isolated places.
Spent 31st Mch in Mammoth Cave
of Kentucky + arrived in Cincinnati
at night.

Left Cincinnati for Washington - 31st Mch.
Washington 1st 2nd 3rd + 4th April

325 Received \$245.00 scrip of Edison Electric
Co. of New York April 6 1897

326 Received 393 ordinary and 393 deferred
shares of the Australasian Electric
Light Power + Storage Co

327. Just arrived New
The New Orleans Times Democrat 7
Mch 29th 1897

328³

Schenectady, Apr. 8th 1874
Improvements on Dynamos.

Was at the Works all day and I notice the following improvements in the works of the dynamo.

- 1 Magnet wound with Manila rope
- 2 Magnet Wires of fibre and turned up 7 strands
- 3 Conducter bars braided with stuff better suited of type
- 4 Rippers all planed
- 5 Better painting etc

329³

Edison & Co. N.Y.

News, J., and I have decided

- 1st To discharge McDougall on Monday
- 2nd To cut the contractors prices very considerable as soon as we have a complete list of what each is making for last month

330³

J. G. Edison

Here is a telegram from Gilliland at New York saying that Edison has another above below the one in addition to the one that was operated on three days after I left here and that they fear dyspepsia.

331³

To Justice C. Rife C.

While I have been South, South W. Shum of K has been appointed 1st Asst. of the

Company (for use with my approval)

332.

Taylor Co. Co.

April 9 1897.

Meeting board trustees - issued stock
in \$5000 company - Received Taylor's
salary, new building completed -
Balance for April 1st shows \$3500 -
\$4000 stock issued -

333.

April 12.

Spranton with Steninger - Painted
Salem Street Works - 1 and daybook
electric frame of station -
Oliver Electric Light Station and
left at night

334.

Carbondale

April 13

Painted Meeting house, Station &
Linn - Made trip on Gravelly
road to Homedale & back
wth Carbondale & Albany

335.

Sehonestead

Apr 15

All day - Made trial of Millsaps
new wire & brought samples home
- Appointed dinner as head of
Trip #2 - Sec'ded back
Hillard for more information on
Cummings cable - Brought land adjoining
New York City 16

336.

Oliver's laboratory

Sent through man to Londonism
to get a plan of Oliver's new

found at Orange & started to design
it.

537. Shop in Canada

Chas. Upton, Bergman & myself were
talking of a shop in Canada -
Smith's want to be in the influence
- we thought that we should have
a 50% benefit over above capital
for our experience etc:-

Land & Shop in Canada	10,000
Concessions	4,000

Bergman & Chas. Upton to put in	
10000. Land & Shop (special)	22,500

4900. Iron	22,500
------------	--------

Shop	68,000
------	--------

Now Smith's cost	52,500
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Total Capital	\$120,000
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This of course is only preliminary
talk

538.

Dynamo

Have been making bronze bearings in the
small machines for some time - these are
painted - We decide to try one on a larger
scale & we shall make 12 bearings
like sketch - Cap on end of bearing
to prevent the bush coming out



339.

New York - Apr. 19th 1894.Universal Supply Co.

Fisher, Taylor, Kavanan, & Co. met at
 Taylor & Co., agreed on a \$1000. Co. and arranged
 to sell about 1000 to start the business
 & pay for stock

340.

New York, Apr. 20th 1894The Edison Electric Light Co. of America (Limited)

Signed all the 200 bonds on them.

341.

New LaboratoryApr. 22nd 1894

Went to Jewell's park to see the plot of
 ground that E. A. E. is going to build a
 laboratory on

342.

Books.

Bought a set of the Society of Arts. Vols.
 15 & 18 & paid \$7.50 -

343.

Heat in Amalgam

We have found out by actual experiment
 that an amalgam made up on the Edison
 type with discs of .006 thickness instead
 of .0015" made less (without any on) by
 40% - Experiment continuing
 further.

344.

New York, April 25th 1894.Universal Supply Co.

Subscribed and paid for twenty shares
 of the Capital stock of this company
 Have \$100 each Capital \$2000.

345. Ohio United Refs. Apr 29 1887
Meeting today - decided to buy all material
such as boilers, engines, wire etc ourselves -
Inspector to be hired - ordered another call of
10% -

346. Edison Apr 30 1887
Returned from South much improved but
still with abscess. not quite healed.
May 2nd -

350. New Laboratory
Saw Edison at Orange & discussed
the new plan - instructed me to
ahead & get an architect immediately
on it -

May 3 1887
Put the Laboratory into the hands of
J. H. Moley, 11 Broadway & Barclay

351. B. E. Light & of Charge L. etc. May 4th 1887
Boardholder meeting - approving act
the action of the directors for New
York

352. Edison Edison
B. H. P. & I met J. O. B. at his house and
decided to make some little improve-
ment and use later for feeders in New
York

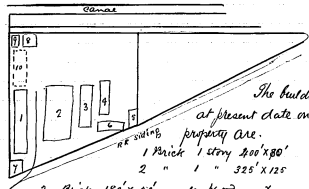
353. Edison United Co May 6 1887
Meeting today - decided that the Company
could do its own construction and buying

or contract for same if the officers so desired

3574

Schematic map, Y^d 1147

Spent the day at shop on discussing with
leaders with Krumi etc etc
Foundation is built for the new tide shop.
They are laying a sewer under the Canal
They have bought the corner property



3. Brick 150' x 50' — 4. Wood X
5. Galvanized house 1 story X — 6. Stone wood
X — 7. ' 4 Brick Gas house — 8. Wood Stables
X — 9. ' 9 X — 10. Brick
now building 1 story X —

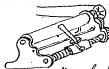
3575

Graphophone.

May 8th 1894

Saw the Graphophone today at
Barber & St James Hotel. The Oblique
inhibited it & I had a typewriter here
to show it up. I was arranged to
run with foot power with a governor
attachment between the reader and the

instrument is that a practically uniform speed can be kept - Cylinder of paper with
 & of wax on it - Cylinder has a stop motion
 so as to stop without stopping thread -



The talking diaphragm has
 a cutter point on it and
 rests on a $\frac{1}{2}$ round
 piece of brass that
 fits the head of the machine. Its
 receiver is similar as regards the head
 but it has a small point that is fixed
 to its diaphragm by a silk thread so



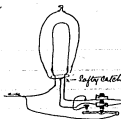
3068 New Laboratory

May 9th 1888

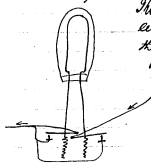
Looked over plans to Odum & see and he
 will turn them over to have a rough
 estimate made on them
 decides to have office and shop floor
 16' high instead of 12' and two rows
 of columns

3070 Municipal Lamp

John, Jennings and I talked with
 Odum on the Municipal Lamp.
 What will prevent the 'luc' from
 running down the wire. Odum
 suggested a number of ways of
 preventing it amongst which were
 the following:-



Differential Cut-out - Two wires run up one end of the insulated except at the top where they are connected by safety fuse. When fuse goes or either wire is burned the magnet will close circuit round the lamp.



This is purely mechanical, if either side wire are off the lever will close the circuit by the spring pulling it down.

368. Monograph.


Making cylinders of plumbago, hunkite, and stibnite - No record on this is made by a point and the dust falls away leaving no shaving etc -

350. United Co.

May 13 1884
Meeting today at which it was agreed that the Co. should buy all its own material and put itself in such a position that it can erect plants if it likes -

360.

May 14th 1884.Edison Laboratory all day.

Underground conductors
I designed a new joint for Edison
for connecting together the copper
rods in three wire lighting. Make a
spiral of copper the

 section of which is
 as 1 to 2 1/2 in regard
 to its own section and half of the
 conductor. Stamp a thread on
 the end of the rod before it is
 put in the tube. When the tubes
 are (and these spirals are on one
 end and are screwed back on to
 the connecting end and soldered.
 Both the end and the spiral will
 be soldered or rather tinned before
 hand.

361.

Bergmann Stock.

I received this day sixteen shares
 of B and C Stock from Edison
 as per agreement. Certificate 319.

362.

Carbon

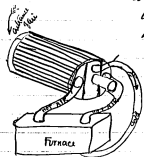
Edison made some exceedingly
 finely divided carbon by mixing
 strong sugar acid with a saturated
 solution of sugar and water.

363.)

Monograph. Posthumus May 16th 1894.
 That will be able to lift our cylinder
 as well as stop and start at ease etc
 Edison proposes a machine that will
 cut a groove ahead of the talking
 needle and the indentation is
 made at bottom of that. This is
 reproduced by a point on a hair
 spring which just laps in & has
 a guide to guide it by the inside
 portion

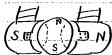
364.) Edison's Hot engine

He gave me the ideas he has had in re-
 gard to the making of his hot engine
 the experiments for which I made for
 him at Fort Myer. He makes up



An amateur of this tube of
 iron placed lengthwise as
 in sketch at each end
 he has a plate so arran-
 ged to open the tube
 so that either cold air
 or hot blast can be
 sent through. Blast
 spray cold air coming
 through middle and
 passing under furnace goes through
 the two sides and out then utilizing
 all heat.

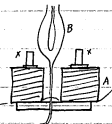
He proposes to make the magnet heads
with slots in so: - These
slots are filled with wire
wound round the
outside of the armature
but not on it and left so that the
armature can freely turn -
Current in wire round will make
a N & S on armature, this being
so the N of arm. & S of field will not
only attract but the N of field will
endeavor to repel the N of arm.
I am making one of 25" diameter
and 36" long.



360's Phonograph. Sat. May 17th 1894
After trying a large number of
compounds of Paraffin, Resin,
Asphalt, etc etc I found
that the best mixture so far
for an indentation or even for
cutting or scraping is 1 1/2 parts of
Resin and 3 of Paraffin.
I find that a wax like paraffin
with turpentine over it is also very
good as it leaves a cushion behind.

366's Lamp Manufacture. May 18th 1894
Laboratory all day.
I see that Oilum is using a device for

straightening the carbon in lamps
which he has evidently been using for
some time. He finds that a magnet
attracts the current
passing in the carbon
and he utilizes this
for his purpose:-



B. Lamp on pump.
A. Strong Electro magnet
x x for core poles

That can be removed at will
& shifted to draw the carbon in any
direction

364. Laboratory (Res) May 19th 1874
Olson, J., Greenland and I went
discussed plans at Holey's office
and decided that they were right
and that they could complete
them. Olson went to Schenectady

365^s May 20th 1874
United C.

Chemist and I met G. C. Lumm
this morning at 6.5⁵ Ave and
got from him a piece of 31% off
cast which was guaranteed to be
better than any price they had
ever given to anyone else.

Olson at Schenectady today and
Grove

369. Lubing Joint

East Tennessee

Lab. E.N. May 21st 1894

Making a new joint for rods. in tubes.
 The two ends set up to form a cup and
 ball and secured together
 by screw and nut
 sleeve A+B. then soldered well.
 Holes are drilled in A+B all round
 to allow the solder to run freely
 & make a good joint.

370.

Phonograph

East Tennessee

Lab. E.N. May 23 1894

I am making a phonograph for Edison
 in which the receiving needle never
 touches the surface of the record but is
 itself electrified and is attracted to the
 surface more or less as the record is
 indented more or less.

East Tennessee

Lab. E.N. May 24 & 25 1894

Worked all both days on these

We made a receiver on Phonograph
 with a point composed of fine camel
 hair which taps on the surface &
 makes a minimum of scratching
 noise. It also is in adjustment
 at all times. But if exactly
 in the track the talking is best
 and a point of 4, 5, and 6
 bristles laid side by side so:-

but the bristles were not so good
as camel hair - and they gave
more scratching noise owing
to their being stiff.
Gilliland sick & home last days
May 26 & 1897

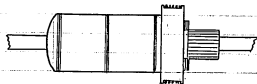
C. F. Gilliland, M.D.

I made phonograph recorder pen
of sealaten hair. I made into a brush
about .004" diam. This brush
gives absolutely no scratching noise
the talking is low but very good.

I made diaphragms with points on as
with sealaten hair brushes of all
sizes from 1/4" thick (which is the
width of throat on machine down to
".008" - I also did the same with light springs
such as we generally use.

I made bank
for diaphragm and for spring on dia-
phragm of the following:

Pick, steel, elasticon, elasticon (with),
pick head, pick end, a single bristle,
a single whisker hair, elasticon skin
rawhide, soft rubber, and fine paper
edges off, all of which gave talking
but when talking was at its best there
was always more or less scratching -
he just thru elasticon better in the
perfect than the others but inferior
to sealaten hair. I think -



Having found a point that gives no scratching I shall now endeavor to get a thinner foil and better transmitting diaphragm and point; and must now delicate receiving diaphragms.

May 24 1894.

C. S. Gilliland still sick

Phonograph:

Made a receiver point of a single hair, bristle, & also of two and more scales of hair. fastened to a sensitive diaphragm a, this was cut long and guided by a screw mounted on a bridge b.

371 Edison C. Light Co. of Edison Co.

Received Bonds 188, 189, 190. in exchange for my bond vouchers.

372 Edison Co. Co. Armature "4"

This armature was made some time ago now. Coils resistance was inserted between the tip and the tongue in such a manner that the resistance across the brushes was double that of an ordinary armature. The wire was wound double to prevent induct. and was wound round a short placed over the end near commutator. The brush covers three bars at the time. The Coils were used in one length of 4. S. wire #16

23 feet long (0.58 ohm coil) resist. Vb6 cold.
 Rubber tape humulate. Wire in multi core -
 0.22 ohm each side - Ann. res. 0.46
 Armature was run as a dyn. at 40 amp.
 (1/2 load) brushes set at non spark point
 load was varied every 15 minutes, 0, 20,
 40, 60, 80, 60, 40, etc etc. There was
 as much spark at 0 or 80 amp. but at
 80 amp. it cut more - Temperature 18°C
 after 3 1/2 hours and extra 177°C. Air 20°C
 Note Speed of extra coils greater than
 others would radiate faster.
 As a motor it ran as well. General effect
 of the beta res. is to make as much spark
 with a variation of 40 amp. at 1/2 load as
 a regular #4 would make under a varia-
 tion of 15 amp. so res. practically
 increases neutral point three times.
 At 80 amp. there is always a slight spark
 which cannot be got out, it however does
 not cut much.

1928

Feb. 24th 1928

J. J. Gilliland quite sick -
 Transformer is transferred from
 two machines 1200 v + 45 G each
 + take out 500 a. at 115 volts -
 Transformer armature body size a
 regular #6 104 divisions 12" 11" 115
 once around and 26 comm. blocks
 2000 in main dia 7/8 and on 2 dia.

303
 28

"042". Secondary winding 3 "14" 3 or 9
 times around and 48 or 26 blocks
 Resi. segm. - "19 thru - perm 0020"
 H. O. Secondary 430
 " " Primary 625 } 1335 or

50% more than an ordinary "16.
 I figure on this that with the thin discs
 at 2000 we shall have far more heat in
 the iron as on an ordinary "16. To have
 50% more heat units but at this speed
 it ought to radiate faster & get rid of
 it.

379.4 Electro-Thermic Battery.

Following up experiments shown at 323
 and 364 we have just finished
 drawings for a generator on the
 principle

5/4.

Lab. B. 2. June 1st 1897Phonograph:-

Made chisel point talking diaphragm
 and tied this as wide as $1/40$ "
 and as narrow as $1/10$ "

Received from these records
 with bristles, Camels hair, etc. etc. with
ridge and guide for the pointer.



He found that by talking low
 in a mouth piece connected by
 a tube you could do away
 with all dampening of the
 diaphragm and get excellent
 talking. On the receiving diaphragm

(which we now made of gold leaf
skin stretched) we can use a bristly
tip bristle without getting any
 scratching noise.

Also found that a needle (which
 is bent or flattened and fastened to
 the center of diaphragm) put
 talking on the foot that was hard
 very low & which could be very
 readily understood even though
 you had not heard it set on.

We use two earpieces on receiver
 all the time

G. F. Gilleland still sick in
 bed.

3/5 MagnetismLab. C. H. June 1st 1884

Made some days ago a magnet of
 #4 telegraph wire (bare) 160 feet long on
 which was coiled a "22 copper
 wire for 40 feet. On passing
 a current through it the
 iron was magnetized for about 17' from
 the end of the winding at both ends and
 then again at each end of the iron wire
 but practically nothing in between.

When the wire was cut short so that
 it was a 40 feet magnet, and a
 strong current passed around it
 it retained its magnetism for 10 or
 12 hours after the current was off.

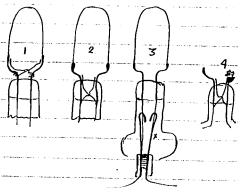
The discharge of a magnet generates
 a current in a coil around the iron
 in the same direction as the magnetizing
 current and this tends to magnetize
 the iron and only lets it come down
 very slowly. When the magnet is
 very long this seems to be very
 extended.

3/6 Stenograph

We have had excellent talking all
 day have used for talking Stenograph



Stenograph with needle
 in middle two spring -
 the same with bridge
 to guide it -



Diaphragm held by three
springs & needle with
bridge

In some experiments we have
let the bridge ride on the lamp or
cylinder in which case the needle
only just projects - With low talking
this is very good

SVY.

Lab. E. H. V. June 2 1894.

Municipal Lamps

Jinks, Lenniger, & I tried a lot of
lamps of different styles as shown
opposite - We found that whenever
two wires soldered (apparently) together
of copper, the one that globulated
generally touched the other one
slightly and when cool they could
be separated as a & show the
oxidized surface of the other wire -
This means bad contact and only
an accidental closing of circuit -
When extra wires of platinum
were used a perfect globulated
soldered connection as shown
in Fig. 11.

Fig 1 has two copper wire fastened one
to each pole and each led over & op-
posite, as do the in class previously
but

Fig 2 has platinum wire led over but

The platinum goes right through the seal and may project a very little into the lamp.

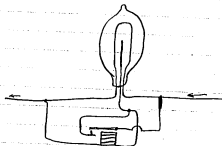
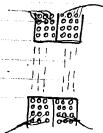
Fig. 3. Shows a lamp of Odium; it is entirely mechanical; the two springs at x are held apart by the wire going through the glass, as soon as they are loosened the springs close and short circuit the lamp.

Fig. 4 is a Fig. 2 fixed.

Lamps tested. Fig. 1 all bad contact even if they worked. Fig. 2 very good a large percentage caught. Fig. 3 all caught but one or two that are found were defective. They however made a great deal of flame inside before they loosened the wires in the glass so that the springs could be set free which would be objectionable only if used in the house.

3/4" Dynamometer. Heat.

On a *20 dyn. we have 13 bands, four of which, (2 on each end) are connected together by copper strips. These 4 develop 160 r.a. when ammeter is 125 r. and the other 9 develop about 140 r.a. The copper strips are so short that even if they were german silver they would still develop about 110. If there were no strips the end bands would do



same as others, making total of 115 instead of 300.

If the armature was wound with Ger. Sil. instead of brass wire soldered every 3" for $\frac{1}{2}$ " or every 4" for 1" heat would be less than half.

The heat due to current alone on the wire is 1240 on a vertical 20° and 1150 on the old style so that at present the band heat is 25% of the total heat. (May 11, 1894) Schmetzky

894 S Dynamometer slow speed

110 Volts 200 Amp. 500 rev.

A "16" in all mechanical respects.

Arm. 14 lbs. 6" \times 9" twice around.

and 400 blocks 1 vertical - 88 div.

Height of wire 9 lb. Res. .022 ohm

Magnet. 160 lb. of 71 (35 + 3.41) each

16 mm - Ext. 100. full load 1.6 ohm

Brushes a little thicker and $\frac{1}{2}$ in.

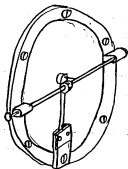
380 S Municipal Lamp Cal. E. H. June 2 1894

Edison designed a new municipal lamp which cut out and close the circuit as shown in sketch. Lamps must always be put in one way, but that is in detriment as the wiring can be arranged for that - None making for test

381 S Monograph Cal. E. H. June 3 1894

Used Alaphragm of felt of varnished thickness backed up with cotton

Sound comes to
Case 5" x 7 1/2"



375

June 6 1897

On jury duty from 10 a.m. until 12 noon

376

B. F. Gilliland also sick in bed.

377

Stenograph

As the low sound makes an indent small in depth, and the loud sound sounds on deep; and as the loud sounds make the diaphragm go in deeper than necessary, we put a stop on the needle spring so as to prevent this. We then found that you could talk to the diaphragm as loud or as low as you like and there was very little difference in the receiving diaphragm.

We will also try a double stop, that is one for each side of the spring. As shown at x.

378

June 7 1897

On jury duty from 1 p.m. to 5 p.m.

379

June 8 1897

On jury from 10 a.m. until 11 a.m.

380

B. F. Gilliland a better letter.

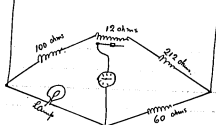
381

Met M. Conway at Hoffman Annex at night

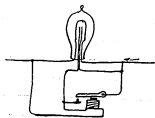
382

Chicago Union Station

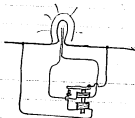
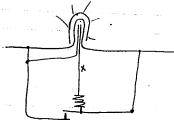
Went to meeting of Western District Committee at B. F. J. Annex late



393.



394



396

393. Howell toll meter a. made for
Cui. O. & other stations -

394. Municipal Lamp. June 9, 1887.
This is an improvement on Edison lamp
at 380. When the vacuum is partially
destroyed & metals in vapor the two
carbon wires in lamp will have a
current between them and close the
magnet which then receives current
thru the contact points &
reopens the lamp closed.

Municipal lamp
Two wires in lamp close together - one
connected to a fine platinum wire
holding up a bow from making contact.
When bow flex. across the carbon wires in lamp
the wire is fused & the spring acts permanently
to close circuit - This is an improvement
on one that Edison told me about today
but had only one wire inside -

395. Municipal Lamp. June 10, 1887.

In 394 it is quite possible the arc instead
of striking right through the two wires
would be repelled by one pole, as Edison
suggested that we put them as shown
in sketch. Current passing across the
wire would ~~close~~ close the top magnet
when the armature point would
close the circuit permanently -

196.



The rounded diaphragm
is exaggerated to show
clearly what it means.

386^s Photograph.

Lab. C. K. ^{June 11 1894}
Made this mica diaphragm with a
short thin spring 2" in length, the
spring fastened at both ends and point
mounted on to diaphragm with cork
or leather between. This point has a
shank on which extends through dia-
phragm with nut on other side. The
nut however frequently buckles the
diaphragm if screwed up tightly.
-C. F. Gilliland still sick-

387^s Photograph.

June 13 1894

In order to have perfectly free movement
of the talking diaphragm J. A. C. suggested
that the diaphragm of the ear was pulled
out by a special apparatus and that
this was so done or less according to the
noise. He said make a stiff spring & fix
it to the centre of diaphragm & leave the
dia. loose. We got very good talking
with this and we got the quality of
the voice which is almost impossible
to get with flat diaphragm. Also
low talking is about as loud as loud
talking because for a very slight
movement such as the hissing sounds
make the spring is very flexible
while for loud sounds the spring
movement would reach 90° or higher

401

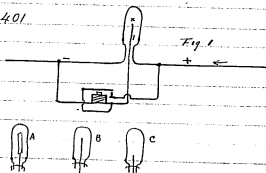


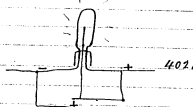
Fig. 1

390 Uptown Station June 13 1884
Meeting at C.H.'s house of C.H., Rail,
Lunt, Kuni, CB, & G.A.C. discussed
station matters and the various specifica-
tions

390 Uptown Station June 15th 1884.
The G.M.W. received an order for
\$100.00 for Uptown Station today -

401 " E. J. Gibbard about well again
and going West to recuperate -

401 Municipal Camps. June 16th 1884.
We tried today 15 lamps each of the
three A.B. & C. in device as shown at
Fig. 1. — A had a thin piece of steel
sifter running up two kinds of keegle of
carbon — B had a plat wire running
same height — C had a plat wire about
half height of plat in B — They all
worked perfectly, cutting out promptly
without any unnecessary flaming or
heating.
He then tried 3 long plat. B^o with the
current reversed so that + was connec-
ted to + pole — All three cut out perfectly,
but the platinum wire immediately
fused down to 1 and stayed there until
the carbon broke.
Then C^o and then A^o did the same
but cut out perfectly.
Then B had current in direction as



shown in Fig 1. The wire got blue about $\frac{1}{2}$ way up and just red on top - When I had current in direction as shown in Fig 1. The side toward the positive side of carbon got black on top and for about $\frac{1}{2}$ down as if carbon was being deposited. Then lamp, I watched through a smoked glass - All the lamps were tested with about four times the normal current or about 16 amperes to make them go quick.

402. Mumma's Lamp June 17th 1894
 Tried 15 lamps of the new Edison type today and all cut out perfectly when the carbon broke. The middle wire had an iron wire attached but that held up a spring from off a contact point. When carbon broke the current passed down the center wire heating it to fusion & letting down the spring & broke the circuit. All we tried worked perfectly and we put current through both ways.

403. G. Underberg & Co.
 Made another bill of \$2000 at 15 days - Saw Hume & Francis and discussed Agency matter with them. Got them to understand that this Co. would do business by extra agents in the Govt Agents territory (except giving the Govt Agent 10 commission) if it could as it was a necessity (absolute) to do all the business that could be got in

Electricity as a Safeguard Against Collisions on the High Seas.

In an able editorial on the recent collision between the Britannic and Celtic, the *Boston Herald* says:

Assuming that two steamships are, under such conditions, approaching each other, each going at a speed of fully twenty miles per hour, that covering the space that separates them at the rate of a mile in a minute and a half, and it becomes evident that the possibilities of a collision are not adequately provided against by any of the appliances that modern science has supplied to our sailors. Under the conditions we have referred to, it becomes very largely a question of luck. If the hulls of all vessels are constructed of steel or iron, as they doubtless will be before long, it might be possible, by the use of electro-magnetic devices, to receive a warning of the coming of another ship within a range of three or four miles of the vessel upon which the aforementioned apparatus should be placed. Indeed, it is not impossible that electric science will be so far developed as to render practicable telegraphic communication between two vessels thus placed, and in this way each could communicate with the other, and take the measure necessary to avoid the danger of collision. This would be a great step in advance, and considering that a modern steamer has little to fear from the ordinary perils of the sea, it would remove what is now about the only danger that threatens those who wish to make ocean voyages.

Elect. Rev. June 4 1887

order to make up the enormous loss it is now making—

404 *C. P. Gilliland* June well and fine met.
for a short time

403 *G. E. Light & Co of Europe* June 20 1887
Meeting directors - Batchelor, Sumner,
Late, Louisa (Cattling, resigned)
Authorized power to Hayes & Lamp or sell
the founders shares left with C. E. of Paris.
Authorized contract with Lamp Co. for royalties
on lamps sent to Europe.

Electric Chem a duration and cutting res

406 *Western Union Tel Co*
They are now putting up the 16 machine
we sold them for 125 Broadway.

407 *Left for Pittsburgh at 8 p.m.*
June 21st & 22nd in Pittsburgh looking up
matters in regard to sheet iron of 1004
thickness. Went to Denbar & the U.S. Iron
and tin plate Co work - Went to West-
port. At Westport the heat of the plate
Co will get in what we want I think -
Left at 4:30 p.m. for New York.

408 *New Amsterdam* June 24th 1887
Filed a number of things today to get
a suitable & cheap material to make
the photograph sleeves of.
10 Ream 10. Karlin 1 Ami Wood tar (1)
" " 2 " " (2)
" " 3 " " (3)

10 Resin 10 Karlin 4 Pine wood (as) (4)
 " " 5 " " " (5)
 " " 6 " " " (6)
 " " 8 " " " (7)

1, 2, & 3 poured easy but were brittle
 4, 5 poured easy & were better. 6 & 7
 poured not so good but good enough & were
 very hard -

10 Resin 10 Karlin (8) very brittle &
 unsatisfactory but I found that the heat
 was not right for this and I succeeded
 in making (9) 10 Resin 15 Karlin
 which moulded fairly well and was
 very hard (10) 10 Resin 5 Karlin flows
 too freely & brittle - (11) 10 Resin & 6 Karlin
 ditto - (12) 10 Resin 1 Karlin ditto -

"9 is excellent so far - It does not mould in -
 it does not stick to tinfoil nor paper -
 All from 1-12 are able to withstand the
 tinfoil and 9, 10, 11, & 12, does stick to paper
 but 1-8 do -

Not an iron mould slightly planed over
 "9 casts fine stuff

409

Moulded dark stuff June 25 1844
 Met Mr Wood (Assessor) at Monte &
 put the property in his hands to fix up
 and sell or rent.

410

New Compound. June 24. 1844
 (10 Resin 15 Karlin - "9) In experimenting
 to mould this we tried - Casting mould

with plumbago, - with thin coat of plaster of Paris
with powdered pumice stone - thin solution of
Karoim, - starch, - all of which came out
more or less poorly. - He now moulded one
in a highly polished mould and it came out
beautifully and polished

411 Cont'd.

June 28th 1894

Went up to Schenectady, took over the feed
contract with Keweenaw & Bussell, previous to signing
contract

Sales for January -	\$74,580.16
" Feb. -	69,801.47
" Mch. -	145,808.68
Apr. -	74,941.44
May -	120,899.49
June 1894 -	84,165.75
<u>Total</u>	<u>\$572,507.59</u>

412 G. E. Light & Black

Bought 60 Karim at \$225 - \$13,500

413 New Compound

June 30th 1894

- (3) 8 Karim 4th Karim - Run free - Black
no bend - breaks sharp, cuts like hard
rubber -
- (4) 6 Karim 6 Karim 1 Bussell -
Run free but too heavy
- (5) 6 Karim 6 Karim 2 Bussell too soft
- (6) 5 Karim 1 Paraffin 4th Karim heated
run easy, cut well - but a little
soft - this day very warm -

414 Cash

June 30 1891.

Cash 1- 11 Ward Bank.	749 00
Street M. & C.	1440 75
Manama Bank for Savings	384 35
Newark Savings Bank.	50 00
Depos. E. M. W.	589 22
" " J. L. Smith	185 00
" " H. M. Linn	416 46
" " J. A. Edson	658 20
Cash in hand	1090 00
Bonds 1- 2 4% Gov. Reg. 125.	2500 00
3 8% U.S. 100	870 00
Notes coming due next 4 m.	10891 00
Stocks - 3 1/2% E. C. Light Co. 1250.	87560 00
340- E. C. L. Co. of Charge Lin. & Y	2632 00
3 1/2% E. C. Light Co. of New York	3850 00
1063. Engle's B. & S. Co.	1063 00
Ind. & C. B. Light Co. at 200	500 00
204 E. R. & Co. of U.S.	2040 00
25 K. H. & Co. at 10	250 00
50 International ditto 10	500 00
252. Magna E. R. & Co. 100	25200 00
5 Edson Lamp Co. 4000	20000 00
1553 Edson Machine Works 100	155300 00
2493. Bagman T Co 100	24933 33
102 1/2 Taylor T Co 100	10200 00
100 The Milling Co 1/2	100 00
Moscow Mining Co.	0
5 Panama Canal Co.	252 70
	7343 637 71

Carried forward		\$43,634.41
100 Mass. Silverizer Co.		100.00
50 " Aluminum Co.		0
1870 " Meane Box Co.		0
5 " Photographic Co.		0
593 Ordinary } Quikaban S.L. P. Co.		393.00
593 Preferred } Storage Co.		393.00
Phragas Motor w. France		1448.16
Pumtine 7210 lbs 2 1/2% + cart		840.20
Books		646.00
Pictures		494.00
Property: - House at Maple Park.		500.00
Lot " " "		100.00
144 Mass St Newark N.J.		338.02
75 N 100 Newark N.J. N 2 + 65		90.00
4 66 Pot Grubst. Nuel		250.00
Salub. - Corn Can w. France		146.00
" " " Canada		65.00
Amateur Ins " "		63.00
" " " France		146.00
Due from C. E. Light Co. 10% of }		600.00
what is due them		7
		\$43,634.41
Dec 31 st 1886		\$36,639.00
Jan 30 1887		\$36,436.49
Increase		\$20,494.00

413. Canada Exp. Aug 1st 1884.
 Koa, J. & Koa & Emma left here
 July 3rd for New Brunswick - Fall River
 Lew & Boston - Rail to Portland -
 Boat to St John N.B. Rail to Camp-
 Belton - Stayed 10 days at Mr.
 Stephen's farm at Flat Lands N.B.
 Fished for Salmon on the pools of
 the Campbellton Club. - During his
 time made a journey up the Metapedia
 river by Rail & down by Canoe -
 Stayed at Quispesset and fished
 the pools of Sir George Shebbs by
 his permission - Bought only 2
 Salmon 4th & 5th - Rail to
 Riviere au Loup and boat up the
 Saguenay river to Chicoutimi &
 back to Quebec - Rail to New York
 by Quebec Central & Connecticut -
 During the time Koa & Emma had
 measles & I was sick a few days
 as well as Maria - Emma is
 sick so had a girl to get her home
 416. E. W. C. of New York Aug 1st 1884.
 Hand and Seal (Laying main and
 fender in Broadway between 22nd & 26th
 Street - Buildings being pulled down
 for Central Station in 26th Street -
 Laying being delayed by not having
 enough sheet piling at a time -

417. Bergman & Co Aug 1st 1884.
 Gave notification of passing of dividend
 for July 1st owing to heavy drafts by
 the United E. Ry. Co. Aug 1st 1884.
 The E. United Ry. Co. Bergman very much dissatisfied and
 want remuneration for loss - During
 my absence board passed rule for all
 plans to be put up with Bergman
 fixtures or not at all - Hypothecated
 the light & of such action and Ch. J.
 T.M. Order are now trying to come to
 some equitable arrangement to suit
 Bergman.
 419. New Lamp. Aug 1 1884.
 I learn from Odium that the new
 lamp is showing up decidedly
 better than we expected having already
 attained an average of 1000 hours
 & some to break yet. 15 to the H.P.
 420. E. E. Light Co of Chicago Ill. Aug 1 1884.
 This Co passed the interest on the
 bonds today.
 421. Sprague Electric Patent. Aug 1st 1884.
 Hand Shown today for writing
 Patent. Sprague 21.85
 422. Odium has laboratory Aug. 4 1884.
 The brick work on this is done up to
 top of window and first floor.

W. Odium has added other building, which Mr. Laft (the architect who succeed Mr. Herby) is now designing - Odium not satisfied with Herby's supervision - Cauter the mason contractor doing bad work - Everything now being inspected by Laft -

423

Plaque French patents

Ordered Brandon et Fils to work
168128, 168129, 168121, 168694,
169153. - The first 3 Sept 8 -
the 4th on Sept 26 - the 5th on
Oct 6th the 4th on 4th Oct.

424

S. M. waves Aug 5 1888
Spent all day at Schenectady, N.Y.
on new 500 amp. and 48 amp. dynamo.

425

Oiled paper insulation

I find at Schenectady that the insulation of the busbar oil paper has deteriorated to such an extent that it is no good at all. To spark goes easily through it anywhere and armatures (Alumina) made with it burn out as fast as made have brought some samples of paper here and instructed Walters & Co. to find out what is cause

Two nine month
 Genl Exp. 20 $\frac{100}{100}$ %
 Depreciation 5 %
 Boxing list etc 206 %
 Total Sales \$1439, 167-38
 Profit (Gross) \$141266.60
 Losses \$3847.94

426⁴ Balance Sheet of the C. M. Works.
 July 1st 1884

148,820.00	Acc. Receivable	
408,949.62	Libry Material	
63,749.76	Raw Material	
2,112.92	Debt Cash	
8,050.08	Cash	
501,920.44	Mach. & Tool.	
18,183.34	Ins. & Freight	
24,292.99	Patent of	
161,498.84	Real Estate	
	Acc payable	165,926.01
	Profit Loss	184,050.00
	Rule payable	272,098.84
2,123.32	Horse & Trucks	
2,072.73	Patent	
	J. A. E. Loan	120,860.62
3,265.62	C. C. for Int Stock	
338,400.00	Good will & Patent	
466.44	Boxing	
2,381.84	Insurance	
17,500.00	Stk. Mfg Co.	
	Capital	780,000.00
	C. P. Light & London	33,339.33
	C. C. for Int. Loan	3,001.00
2,267.11	Genl Exp July 1 st	
207.00	Experimental	
\$1,331,272.88		1,331,272.88

Res. Amature Cold .00873 ohms

" " hot .00795 "

Increase 4.0% -

Temperature Amature (Cold) 28.5°C

" " hot 13.4°C

Res. Magnets Cold 29.2

" " hot 26.12. Increase 11%.

Magn. base res. Cold 200,000 ohms

" " hot 454,000 "

Armature Cold 4 meg.

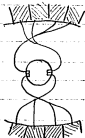
hot 780,000 ohms.

Working figures for this machine are given
in my dynamo exp. book at # 132.

There are some points which when attended to will
make this test more satisfactory.
13.4°C for the amature is bad. It is principally
caused by the 44 diameters wire which is not
enough to give considerable heating by one half an
inch of field before the other. This will be remedied
by 4 D wires. I think at least 6% heat reduction
speed must be increased to 650 or more. Increasing
heat of magnet - the heat in amature will also
be less in magnet - more copper in base
will also be required -

42% Edgais test on New 500 Ampere
Dynamo for Central Station, taken
July 26th 1884.

Time am.	Temp. Rev. Mag.	V	A	Spd R.P.M.	Remarks.	
1	31	25.6	140	400	630 121	1 1/2 hours - no spark
12	32.5	51	"	"	"	
1	32.5	55	"	"	"	
2	33.5	59	"	"	"	
3	33	62.5	"	"	"	
4	34	64	"	"	127	
5	32	66.5	"	500	635	2 1/2 hours -
6	32	70	"	"	"	Brush shifted 7/8"
7	31.5	72	"	"	"	no spark, no adjust-
8	31	73.5	"	"	"	ment. Slightly heating
9	31.5	73.5	"	"	"	warm -
10	29.5	73.5	"	"	"	
11	29	75	"	550	645 140	3 1/2 hrs. no sparking -
12	28	74	"	"	"	3 adjustments of brushes
1	29.5	75.5	"	"	"	Consolidated magnet in
2	29.5	76.5	"	"	"	multiple arc.
3	28.5	77	"	"	"	
4	28.5	77.5	"	"	136	
5	28.5	77.5	"	500	640 138	4 1/2 hrs. high base etc.
6	28.5	76	"	"	"	last 2 hours - constant
7	29	75.5	"	"	"	spark though small.
8	28	76	"	"	"	
9	28	75.5	"	"	"	
10	29.5	77	"	"	"	
11	29.5	77	"	"	"	



428. *Transformer*. Working figure, as agreed on July 16th 1894.

Iron 1125 lbs and 58.5 Amps
Ls 110 " " 500 "

Armature dimensions. Size of a #16 except for length of shaft — 109 divisions with 0.42" fibres. Core made of .006 dia. coated with Edison solution and phosphor plate and sleeve.

Winding: 2 rods 254" x 283" (with 427" insulation) once around and 26 Comm. blocks. Height of rod 54 lb. Res. .0022 ohms — wound vertical for 26 bars (52 displaced) motor winding forming the 66 layer 1-9 #14 (427") with .016" insulation 5

times round and vertical — 52 blocks displaced 52 — 150th wire — Res. 234 ohms. Outside diam of armature 13.125"

Pole of field Magnet rep. #16" or less 32 a.
2000 Km — Winding 9 bands phosphor bronze wire #13 (.096") that probably 100 p.c.

429

Armature heating July 20th Aug 6 1894
In 347 exp. 135 we have a #16 .006 dia. Edison solution armature without wire but increased in feet run 1000 rev. for 3 hr. 48°C in a room of 29°C an increase of 19°C — Allowing for cooling this was an increase of 27°C — This same armature

was run at 2000 for 5 hours and heated to
 74°C in a room of 31°C increase 43°C
 - When cooling allowed for probably 85°C -
 A regular wind #16 circulation at 1500
 revolutions with 250 fath. was run -
 getting about same heating effect as steam
 former (for same wire) wind at 2000 Rev
 and yet not getting same cooling effect
 as speed - Heated without load to
 90°C in a room of 30°C - 60°C increase

Oliver & Swan O. P. & Co.

Balance sheet June 30th 1884.

Share -

17,139 A	£ each full paid	£18,696.	0.0
89,261 A	" " £3 "	267,783.	0.0
23,544 B	" " full paid	117,720.	0.0
Surplus	order balance	5,999.	6.2
24.1.	1886 June 30.	24,516.	6
24.1.	1884. "	16,221.	14.5
		<u>£293,341-</u>	<u>9-4</u>

The B share do entitled to $\frac{1}{2}$ profit after
 a cumulative preferential div. of 4% has
 been paid to A shares - The amount now
 £446,630-14-8 - £46 paid out of future
 profit

Cor

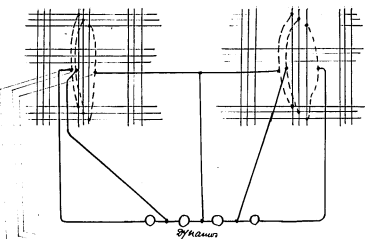
Cost of Patents, Goodwill, Melani-
 nary matter, loss on working g.
 see last balance sheet.

£298,354-0-4

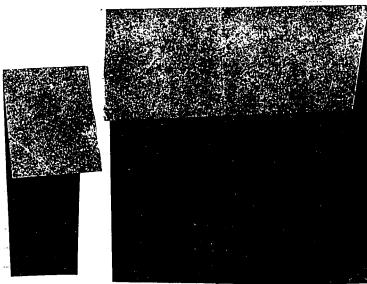
Quarter expenditure *L 4467-4-7*
 Res. Sale of airplane 2004-75 *L 302.821-10-2*
117 F20 " 0 " 0
 B. Share earnings
 Reduced fig. *L 24,991-4-7*
 Gen. Mortg. *14,500.* *13,691 " 4 " 7*
 Install. " a. Progress *2,794 " 15 " 6*
 Plant + Stock *30,845 " 0 " 6*
 Office furniture *1,057 " 13 " 5*
 Ref. vrs *12,946 " 10 " 11*
 Cash. *L 14,174 " 1 " 5*
L 491,343 " 0 " 4

Profit & Loss of

Dr.
 Stock June 30 1896. *L 15,001 " 15 " 9*
 Wagon, purchase, install. *34157 " 2 " 8*
 Salaries, fees, Rent, exp. }
 Ins. etc. Gen. Mortg. for 2000 } *6914 " 6 " 1*
 Salary S. M. Swan. *600 " 0 " 0*
 Depreciation on Plant, etc. *3291 " 15 " 0*
 Wagon, K. Rent, Ref. vrs, etc. }
 Gen. on Personal *3,000 " 7 " 12*
 Int. on Mortg. *P.F. 1 " 15 " 5*
 Bal. being profit *16,221 " 17 " 1*
L 31,066 " 1 " 2
 Sale Lamp, tank done *L 65,716 " 14 " 11 Cr.*
 Royal. H. + K. Swan *4214 " 14 " 0*
 Interest *243 " 9 " 3*
 Stock June 30 1897 *L 12,846 " 0 " 0*
L 31,066 " 1 " 2



-60-
old model



Asbestos on the 20th & No. 9 & 10 came down
this morning leaving them here

440 Edison Wiring Co. Aug 28 1889
Received Certificate of stock writ 25%
paid from the Company

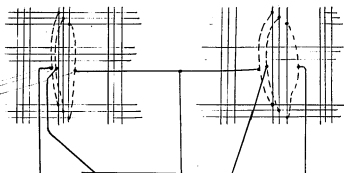
441 Distribution for Light
Edison sent Vail another method of dis-
tribution as shown by sketch - This
does away with a substation for working
outlying districts

442 C.M.V. Schenck Aug 26. 1889
Came to Schenck today. 25th at 11 p.m. & has
been here all day

443 Oiled (Lenses) paper
I ordered the paper fixed up in which
they make our paper so that no dust
will interfere with the proper surface of it
(find that all the paper they make is
bad) by slipping twice they get a
little better and by slipping three times
it is still better but with so much slipping
it becomes too brittle to work. It finds
that if heated to 110° between two plates
a number of times it gets better every
time

444 Cup Connection

I have designed a new cup connection
for the 500 ampers dynamo - The wires
each have a hole & are in direct contact
with the center of cup.



Asparting on the 20th & 21st of 8-0 came down
my morning leaving them here

440 Edison Wiring Co. Aug 23 1889
Received Certificate of stock with 25%
paid from the Company

441 Distribution for Light
Edison sent Paul another method of dis-
tribution as shown by sketch - This
does away with a substitution for working
outlying districts

442 C.M. Jr. Schenectady Aug 26. 1889
Came to Schenectady. 25th at 11 p.m. & have
been here all day

443 Oiled (Lenses) paper
I ordered the room fixed up in which
they make our paper so that no dust
will interfere with the paper surface of it
found that all the paper they make is
bad; by dipping twice they got a
little better and by dipping three times
it is still better but not so much dipping
I have come too brittle to work. He finds
that if heated to 110° between two plates
a number of times it gets better every
time

444 Cap connection
I have designed a new cap connection
for the 500 ampere dynamo - The wires
each have a hole & are in direct contact
with the center of cap.

each is riveted solid. Better connection
is made by the steel clamp which is
springy by the cap being slotted.

445

Dynamos

See photograph of one of our dynamos
as it is made today

446

Hopalong

Aug 29, 1894.

Spent 24" & 26" at Hopalong with Rosa &
the children

447

Five YearAug. 30th 1894.

Meeting at 40 Hall St. - James, J.,
Hudson, Cummings & his Co. Subject
206 ton. It takes 300 tons in two years.
My guarantee 206, any quantity up
to 100 tons each 3 months if wanted and
1/8¢ per lb. payment. 60¢ note
25¢ of each month for month premium

448

Municipal at Campers 1894Sept 1st

Made a 24 hour run also an extra
load test also a piercing test
all of which are in #456 further on

The B. M. W.
 Ledger Balance July 31st 1884

432.548	46	Labor Material		
55.453	61	Raw "		
1593.62		Stky Coal		
		Coal	965	34
304.989	91	Mach. & Tool		
16.740	96	Furn. & Fix.		
24.816	93	Station		
165.169	99	Rail Car. Thru B.		
12.305	32	Gas Exp. pay.		
		Acc. payable	144.829	38
		Imp. Hen	178.771	44
		Bills pay.	261.214	73
463.24		Interest %		
142.607	59	Acc Receivable		
2.167	32	Horse Trucks		
2.072	73	Patent af		
348.20		Capitalment		
		L. A. E. Loan %	120.864	62
		Guamano Bank Loan	120.000	00
481.88		L. A. E. Labor %		
3.263	60	E. C. for Fuel & Oil %		
338.400	00	Good will & Patent		
2.381	84	Insurance		
27.000	00	E. A. Mfg. Co		
		Capital %	950.000	00
		E. C. & Chasmon Sp. Co.	33.333	33
		E. C. for Fuel Light. & Gas	3000	00
447.77		Boatmg %		
1526.776			9,826.776	60

450. La Osa IV.

Sept 2 1884.

Spent Aug 31st + Sept 1st at Schuylady
on Municipal Gymnastics and Simulated
war with Jenks + O'Rienger

451

Hopalong

Sept 5th

Spent 3rd + 4th with Koa + children at
Lake Hopalong - Met Mr. Hotchkiss range
here, 'great fisherman'!

452.

La Osa IV.

Have got Le Grand Parries at Monte Park
where he is fitting up the Eng Orick
building to make the old paper that
we use on Amateurs. He intend to
make also mimeograph paper and
condensor paper as well as anything
else that comes along.

453

Orange Laboratory

Sept 5th 1884.

Spent all day at Edison house on
Laboratory work -

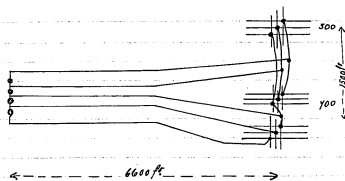
454

Manufactories

Edison's idea now for the future is to
get up processes for manufacture + start
factories - He has corresponded with
David Morgan etc about it and he thinks
they will like it and take it up. It is
an easy formed that can be drawn on
for \$25,000,000 in 25 years but only.

Such money called up as is actually necessary for the present invention - He to have the right to take (possess) all the invention except Or milling, Monopoles,

He proposes to buy a 30 acre tract of land on the small R.R. that runs through from Orange and gradually cover it up with new manufacturing industries. He spoke of two that are now ready to go right into it on which farm what he says and from his application for patents I should say he has been working on a long time - 1st Drawing fine wire such as is now imported by annealing in a vacuum or hydrogen gas between each drawing operation. 2nd Depositing metals in a vacuum by heating them to evaporation, ('or the Arc') in articles placed in the chamber to be deposited on. This would take the place of electroplating and any metal or any alloy of a metal could be equally well deposited - Immediately the new laboratory is finished here will be commenced in earnest.



435. Five wire system of lighting Sept 5th 1897.
 Hearse Mine Co. Francis of Boston send me
 the following condition:-

700 ft. power - 6600 ft. away from center of
 work - 1000 lights - 700 in one mill and
 300 in another 1500 ft. away -

By Otis's two three wire system in series
 or five wire system the cost roughly of
 machine would be

4 black, 150 ft. + 150 a. \$2240

Conductors:- outside wires 20% drop
 inside 1/2 size

\$2360
 \$4600

436 Universal Dynamo test Sept 5th 1897.
 4 1/2 Amp. 1200 Watts 700 Speed.

*1 Dynamo - *1 Ammeter -

Magnet res. 1318 ohms at 15.5°C 108

" base 1 meg.

" res. hot after run 1874 ohms

" base hot 5 meg.

Armature res. 584 ohms at 15.5°C

" base 1 meg.

" res. hot after run 589

" base " " 200,000 - this 9th

better after every run -

Run: Aug 31st 1897 9:15 a.m. to 9:15 a.m. Sept 1

Temp. air 18°C to 21.5°C. variation

Temp. armature - 98°C full heat on

9 hours. No. 1000 stopped 10°C in 40 min.

high it reached 102 in 20 min -
 Logged 1 hour and then put on 60 amp
 and 1200 Volts for 2 hours

Temp 109.5 °C

Now the mach. was tested for sudden current variations.

During the first 24 hours the machine ran without a spark also when it had the overload.

At the end of this we put a load of 16 amp. on the mach. and broke the wire by clipping it in two - there was hardly any spark.

Then the whole load was thrown off in the same way. Brushing sparked good deal this time but it was quickly adjusted - this experiment repeated.

The field was now broken (2001 + 160) without doing any damage - the spark on this was quite small - this in contrast to the copper drools on the magnets. No movement of the brushes for different loads was:

Up.	$\frac{1}{16}$ "	for 12 amp.
"	$\frac{1}{8}$ "	24 "
"	$\frac{1}{4}$ "	36 "
"	$1\frac{1}{8}$ "	48 "
"	$1\frac{1}{4}$ "	60 "

on a radius of $4\frac{1}{2}$ " -

Base measurement after all test. for 1000 hours.

Charles Batchelor Journal, Cat. 1337

This journal covers the period September 7, 1887-December 31, 1892 and contains numbered entries by Batchelor about his business and personal affairs. Included along with the journal entries are newspaper clippings, photographs, sketches, and three kinetograph film samples. The material relates primarily to the experiments of Edison and Batchelor with electric light and power, electric railways, phonographs, and ore milling. Most of the entries for 1892 are about the ore milling operation at Ogden, New Jersey. Among the other subjects mentioned are the construction and operation of the West Orange laboratory, Edison's health, and his trip to Europe (a number of news clippings about the trip are included). The book also contains financial accounts of the Edison Phonograph Works for 1889-1891 and some entries concerning Batchelor's vacation trips to the United Kingdom, France, and Germany. The book contains 288 numbered pages. A photograph and twelve pages from a pocket notebook, covering the period March 1889-August 1893, are interfiled between pages 220-221.

Blank pages not filmed: 220-249, 252-257, 260-288.

Missing page numbers: 135-136, 139-140, 143-146.

457

Pine

Sept 4th 1887
 The Am. S. Store Room caught
 fire at 9 p.m. Sept 6th. All wood work
 in store burned
 and one horse
 but no supplies - Cause Gasoline
 and a light.

THE NEW YORK PUBLIC LIBRARY
 ASTOR LENOX TILDEN FOUNDATION
 410 FIFTH AVENUE, NEW YORK, N. Y.

458. Electric U. S. K. Co.

New price list:

Dynamos	1	2	3	4	6	8
No. of lamps	40	75	115	150	225	300
Elec. outfit*	\$400.00	\$501.25	\$618.75	\$731.25	\$1065	\$1411
Eng. outfit*	\$485	\$530	\$530	\$610	\$685	\$810

Dynamos	10	12	16	20		
No. of lamps	375	450	600	750		
Elec. outfit*	\$900.00	\$1075.00	\$1425.00	\$1740.00		
Eng. outfit*	\$900	\$985	\$1200	\$1360		

The Electric outfit consists of Dynamos,
 lamps, regulator, Amp. meter, indicator
 bare frame, 7 sockets.

Engine outfit = engine, foundation
 box and foundation. (approx.)

These prices will allow a discount of
 3 1/2% off list that with 15% & the
 agent still leaves Co 20% profit

459 New Lamp.

The first lamps of 15 b. elec. H.P.
shipped to the U. S. C. about Sept
1st 1894. 1500 in number.

460 Trague E.P.M. Co. Sept 8 1894

My resignation from the Board of direc-
tors accepted today by letter.

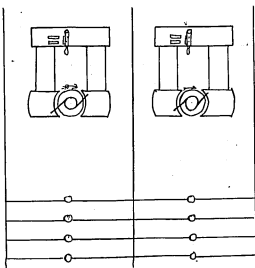
461 Letter to Mr. C.

Meeting of board - Johnson and I appoint
Committee to see Davis and Wick for
portion of Quot. Mgr.

462 Defect in Return System

Two cases have come under my notice
(worthy of notice) where two machines
in series have been running on 3 wire
system, and one has been reversed; by
thus turning it into a two wire system
of which the neutral wire carries the load
for both. As the neutral is generally
made smaller it is obvious this is very
dangerous and in all installations an
amper meter on the neutral is essential
This is most likely to occur by reason of
the brushes being lifted up accidentally
while running - Or when starting
up the plant the brushes of one
dynamo may be set on some time

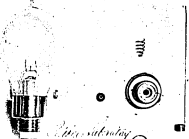
before the other than reversing one magnet,
which owing to the low resistance made by
the lamps on its side cannot reverse easily.
Diagram shows the direction of current -
red line shows direction of current
if one brush is held up. -



462. Safe Insulation. Sept. 12, 1884.
 Sheet 4, 10, 4, 11, as the lake are all
 returned this morning to Eng.
 Met Mr Dunlop the latter here

463. Municipal Lamp.

Photograph of the Municipal Lamp as
 made Pagan
 & Aug 6th 84
 and about
 150 tested
 by Balthazar
 Stangor and
 Janko.



Principle -
 The entire wire
 is made of
 iron (very fine)
 except where
 it passes through
 the glass which
 is platinum. This iron wire holds a con-
 tact plate up against a spring and keeps
 it from touching bottom disk. When carbon
 breaks the current passes down the wire
 wire fusing (or heating) it. This allows
 the spring to push it down into contact
 thus closing the circuit.

464.

Sept 13 1884.

Insulated Wire

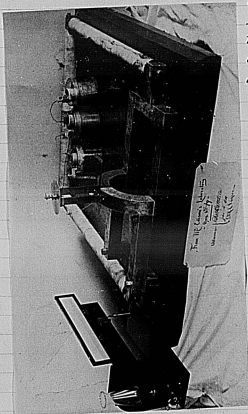
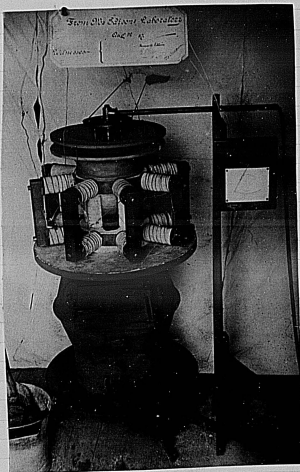
Blair showed me an
 insulated wire that he
 had prepared, the insu-
 lation consisting of per-
 oxide lead and limestone
oil. It can be made of

any consistency from
 quite fluid to a paste and can be put
 on the wire either before or after the
 cotton insulation - It does not burn -
 the peroxide is changed to litharge by
 giving up some oxygen, this is taken
 up by the oil thus oxidizing it.

He also made another insulation
 by taking rubber (in benzole partially
 dissolved) and kneading it well with
 a very large percentage of Karolin.
 This can be put on the outside of a
 cotton insulation as thick as necessary
 after which it can be covered with
 plaster - Both these insulations are
 excellent as regards moisture test -
 they both stand the fire test owing to
 the large quantity of Karolin in the one
 and porox. in the other. They both
 will stand any amount of bending
 without fracture to the insulation -

465. Magnetic Bridge

A paper on this was just read before
the Amer. Assoc. for the Advancement
of Science
by Prof.
Harker
in August
1887.

466.

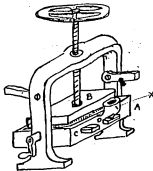
467. Monmouth Supply Co. Sept 14 1887
 Fisher, Taylor, and I met at U.S.C. office
 with N.P. Chiles the manager.
 Got begun good trade and the place well
 stocked with everything - It looks
 good but we must wait until May
 before we can determine how good it
 is - No stock has yet been issued
 but \$1500 has been paid in as follows -

Fisher	\$3000
Batchelor	2000
L. Taylor	1000
P. Smith	500
J. Hume	500
K.E. Rawson	500

Taylor and Co. will take about \$1500
 and I will take another \$1000. This
 will probably see us through the first
 year.

468. Casting Zinc

I went and saw Taylor's process for
 casting zinc - It is good - the
 cast in an iron mould which is
 provided with expansion or rather
 contraction pieces - These pieces are
 loosened as soon as the metal sets
 and prevent the zinc from crack-
 ing by contraction.



This is the idea -
 A is the mould which
 with B down has its
 inside made to shape
 of the zinc to be cast.
 C & D are two keys
 tapered to drive out
 easy - The metal is
 poured in at X and

as soon as it sets the keys are loosened
 and the screw raised up; after a couple
 seconds the keys are driven out and the
 screw run up. The bottom die A is
 now turned over and the zinc drops
 out - Old method of moulding in
 sand 4 per day @ 10. by this method
 you can take one out of mould every
 4 minutes

469. Edison United Light Co. Sept 15 1887
 Meeting of board of directors made
 call of \$2000 from each plant - Two or
 three plants that have been booked on
 for year can now be closed but at the
 old price, agreed to take them although
 we decided in future close up ~~plants~~
 money on any plant - adjourned until
 tomorrow -

470. New Lamp.

The manufacture of the Carbon for new lamp will be carried on by a separate factory and they will be sold to the Lamp Co at a profit - This profit will be divided between the original holders of Lamp Co stock - Edison is now putting up a factory 200 x 25' on the land of the Greenwood Lake R.R. to manufacture these carbons in. - The process will be kept a secret and not patented -

471. Dynamo & Engine for Navy.

Next hundred say the Navy Department want the following:-

Dynamo:- Compound wound - to yield 80 volt 30 amp at 500 revolutions - not exceed 500 pounds - Floor space not to exceed 4 square feet - Height not more than 3 feet - It should have no external field Connection to engine direct on rigid iron bedplate - Dynamo to be electrically insulated from bedplate and engine - no bearing between armature and engine -

Engine:- Has automatic regulation for constant speed - To indicate 5

U.P. with 80 lb steam at piston - height 150 lb - Floor space 4 square feet and height 3 feet - To work either exhausting into condenser or atmosphere Bedplate bolted to deck. Total height 500 lb. and 8 square feet. These data are very exacting - I will however figure it out.

472.P. McLaughlin.Sept 17th 1884

McLaughlin is here from California. He is working up a scheme for selling property in Butte Co.

Cal. He calls the town Normalia. I cut this from the World of 16th

but as far as I know there is no truth in it.

Thomas A. Edison, the famous inventor, will spend the winter in California, near Reno. It is reported that he will build a winter home at Thompsonville, Butte County, Cal., and erect a fine laboratory. For several years he has been experimenting with specimens of the black sand deposit found in that country, endeavoring to extract gold therefrom.

473Edison Limited kept C.

Lamp renewal paid to the C. C. Light Co.

Dec 1884 - Jan, Feb,

Mar, Apr, May,

June, July, Aug,

\$36,096.84

\$25,949.49.

474New Lamp.

M^r Green & Wm Harrington sailed for the Amazon by S. S. Alliance Apr 10th & hunt for Edison -

446. Orange Laboratory Sept 19 1887
Commenced to take charge of the construction and installation of the new laboratory. First piece of machinery (one boiler) has arrived - Main building has half the roof on. Metallurgical building walls are up and waiting roof - Foundations for Chemical and Woodworking are complete and the latter has walls about 1 foot high - Work is done for Galvanometer building ready to commence. Gas machine comes this week.

446. Magnetic Bridge
R. Dickmeyer of Yonkers N.Y. writes to the Electrical Review of Aug 10th 1887 and sends a paper on the subject which he intended to read before the Electric Club. Full paper appears in it with date under date of Aug 27 1887. Unfortunately paper has Prof. Anthony has had the paper since May of present year -



447. Edg's house.
Roof and chimneys at Edg's house 23^d 24 and 25th.

448. Supermagnetic Dynamo Sept 26 1887
In Electrical Review of Sept 26th N.Y.

After 517 Locust St. Phila. Claims to have made practically same thing as Edison for a motor and says he brought the result of his investigation before a Committee of Science of City of the Franklin Inst. in winter 1884-5 and filed patent - Idea of producing Electricity by same means also occurred - he was deterred by excessive oxidation - says he has now overcome this difficulty - refers to Prof. Gore's Exp. Phil. Trans. Vol 40 - p. 173 1870 on "Magnetic changes of iron by heat."

449. Edison limited 1889 Co
This Co. have decided to give 45% off the last price list (see 448) This with 15% off to agents will still leave this company about 100% profit over their price. Rugman, Hunt, J, Tate, & Edison met and decided to give another 1/2% to C. U. Higley Co off present prices, this to be done by deducting 1/2% off on note, when paid and to commence from bills dated Sept 27th 1887.

480. Dynamics. Comparisons of water capacity
price etc.

Type	N ^o	Days	Water Height	High Price	Water	2 N ^o 2 Cylinders	Ch. per hour	Price per hour	
Edison	1	1900	35 th	1,125	2500	47			
Edison	3	1700	1090		7500	125.4			
Edison	6	1500	2130		15000	192.5			
Edison	10	1300	3870		25000	287.6			
Edison	16	1000	6800		40000	407.6			
Edison	20	800	9790		50000	611.6			 This is 15000
Schuyler	2	1400	990	1,146	2600				
"	5	960	2794	1,425	11700				
"	8	450	7700	1,124	29000				

481. YachtingSept. 20th 1884

International yacht race - Seattle vs. Vancouver. This is the second race of the two out of three - Both races were won by the Vancouver and the Cup that was won by the American in 1881 stays here.

482.

Oct 3rd 1884

My brother Sam arrived by Sevia today and leaves for Canada in the 5th.

Oct 6th 1884

Spent Wednesday at Schenck's today with him - introduced him to J.A.F. on 4th

483.

Electric Light Companies combine Oct 6th 1884
The Westinghouse and Thompson-Houston have made a working arrangement to make them stronger & fight the patent Edison has had granted. This is the patent for working lamps in motion in multiple arc.

484.

Edison's Orange Laboratory Oct 7th 1884
Laboratory so that we can now begin to work. - Mason has building of 30 feet of chimney - two small buildings done - Edison told me he had a mortgage on J. & J. 12000

WANTED - Two men and one woman for the Edison Laboratory, Seattle, Wash. D.C. - J. & J. 12000

488. Current MetersOct. 11th 1887

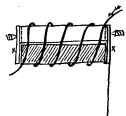
Head Mfg. Works at the Institute of Electrical Eng. He described & showed his current meter. It works by the convection current of air heated by the current passing through the wire of a flat spiral. This heated air turns a paddle wheel which registers on a clockwork.

Points of interest:-

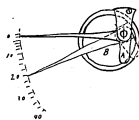
- 1st. It seems to work equally well and regularly when the whole apparatus is heated up by 20 amperes or by 1.
- 2nd. Everything about it is very light and hung delicately. It is therefore an instrument difficult to ship and not liable to get the best of usage in the hands of such men as we have in our plant.
- 3rd. From 2 to 1 amp it is irregular but from that to 20 amp it makes a straight line when showing the ratio of current to speed of rotation.
- 4th. Equally good for straight or alternating current.
- 5th. Angle of frame, about 45° , and they about 16° above spiral for best working.
- 6th. Glass globe should be long enough to stand at least $6''$

higher than the top of instrument.

1st. Source of error. When used a long time the bridge & clockwork will get heated and after the current has passed out the mass of hot metal will form convection currents which will tend to keep the hands running after

489. Current Meter (Water horse)

magnetizes both equally and as both have



an iron core is cut longitudinally, and another piece lays loosely in it on pivots and provided with a flag at each end. These flags overhang the core and - the core a north pole they repel each other which causes the movement of the needle.

490. Thomograph.Oct. 15th 1887

Bellum put the management of the Thomograph into C. J. Gilbert and hands for America about two weeks ago. He took a factory in Bloomfield, N.J., and he is now ready to manufacture

491 Schenck Oct 15th 1877.
 Messrs yesterday wanted me to go into a small land syndicate up in Schenck with Lund, Lunn, Linn and himself - Amount at present wanted say \$1000 - told him I would do so and he could call for the money whenever he wanted -

492 Strague & P. T. Mott Co. Stock Oct 17th
 sold 20 shares at \$75 to Bergmann.

493 Magnetism (Theory) Oct 18th 1877
 Theories of magnetism whether 'current' cause the 'molecules' or 'the entire theory' do not show why the metals iron and steel should be practically the only magnetic metals - I think a study of all the different properties of the different metals should lead to some points in iron that are distinctly peculiar to that metal - For the purpose I shall make a table and when finished shall enter it here.

494 Edison Mining Co. Oct 22nd 1877
 This company has made a further call of 10% making 35% of subscription called in

495 Edison United Co.
 E.P.C. wants to replace Chinnock by D.H. Bates of the P.T.C. Telegraph. This I have objected to very strongly in a letter to him on the ground that it is injudicious to make such a change without having some previous experience (say six months work in some important part of our territory) with him or whoever else might be an applicant. notwithstanding my objection I am informed he has appointed an interview with Bates. Chapman Bergmann himself at the office - I have got Edison to write C.A. 9 a letter disapproving of the appointment of E.H.P. and have written Bergmann (my informant) that I disapprove and shall not attend

496. Australian Electric Light P.T.C.
 Balance sheet 31st Dec 1876.
 Loss for year 1876. \$4549.6.
 Mercur. loss. \$3216.44.
 \$3776.14.5

Expenses have been very much reduced and made proportionate to business done. My interest in the Edison Indian Co. & Sons of C. went in here and the total capital of the Company is as follows:-

Original Australasian Capital
 Entitled to pref. 1% int. 7 & 50%
 pref. in Chileas \$119,855
 Ordinary Edm. Cap. Ranks
 int. also at pref. 1%
 \$34,308

Preferred Edm. Cap. \$4,308

Founders Shares (as regards
 Founders participation)
 \$1,990

Profits required to
 allow of 1% dividend
 on each class.

\$1,198

\$2,439 inc. 2% on
 original
 \$18,789 inc. 10% on
 foregoing

\$15,886 "

497. Dickens

Oct 25 1897
 Heard Chas. Dickens Jr read at Chickering
 Hall. Dr. Marijold and L. "Cris" from
 Newark - introduced by Chauncey Depew.

498. Edison Electric Light Co.

Oct 25 1897
 Annual meeting of Stockholders -
 President J. Ross Smith

Thomas C. Buckle, C. H. Carter
 Noah Davis, J. W. Doane
 L.A. Edison, A. Foster Higgins
 Ed. Johnson, Harry K. Smith
 F. P. Smith, A. J. Thomas
 James Frank, F. R. Walter

499.

Edison United Refry Co.

Oct 27 1897
 Meeting at Edison House - President & at
 Chalmers New Ice Business - Invent. Edison
 & Blue elected directors - Invent. Urban & Hag-
 man Consulting Committee - Johnson sent
 his resignation but board would not accept
 it.

500.

Ed. Edison Machine Works.

From statement Oct 17
 Sales July, Aug. & Sept. \$19,580 or \$70,110 per m.
 " New formula previous \$34,194 or \$9,661 per m.
 Total sales for 12 months \$133,744 or \$112,813 per m.

501

Photographs (From Star (N.Y.) Oct 15)

EDISON'S PHONOGRAPH

The Inventor's Loss is Not a Heavy One

- Possibility of a Law Suit.

A gentleman connected with the patent in-
 terests of Mr. Edison was asked yesterday

whether it was true that the inventor had pro-
 ceeded his photograph.

"He has been improving the instrument for
 some time," was the reply, "and it is almost

ready to go upon the market with a machine
 that will meet all practical requirements. But

have you heard about the phonograph case?"

Inquired the gentleman.

The Star's representative was obliged to
 admit that he was acquainted with the sub-
 ject, and forthwith expanded his ears in order

"For some time past," said the informant

a controversy raged between the Graphophone Co.
 pay, with headquarters at Washington, D. C.,

and the Edison Phonograph Co., of New York,
 public a machine similar to Edison's, and

to use the Edison phonograph. "They call it

the Graphophone, which word, as you see, is

simply phonograph backward, so to speak,
 the meaning of the word being, of course,

"The inventor and Alexander U. Bell. The ma-
 chine has been on exhibition in Washington

and elsewhere, and was shown to be in-
 ferior to Edison's in every particular. It was

that a working arrangement was about to be
 made for the Graphophone company to license

manufacture, a large amount of stock has been
 secured at \$25,000, the par value of each

share \$25 per share. As yet, at \$200, he

been offered for shares it will not be long

until the Graphophone Company, under the

with a capitalization of \$500,000, the par value

of stock being \$10. This stock is now rated

at \$10 per share, and arrangements have been

made to put this stock and bonds on the

market. The American company was to work under license

of the patent company. The first question

usually asked by investors was what the

Edison arrangement had been made with

the Graphophone company. The first part of

the matter had all died, the stock has reached

a high price. Considerable stock was also

given to newspaper men at a special rate, con-
 siderable before, but while the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

only come in at the par value, the public could

502. The Edison Machine Works Oct 31st 1887
 Board of Directors and Stockholders meeting
 at 40 Wall St. - Sumner - Office changed from
 New York to Philadelphia N.Y. Officers for en-
 suing year J.A. Edison Pres.

Charles Schuler Vice Pres.

Wm. Sumner Secy & Genl Mgr.

Jo Hutchinson Secy

-Received Louis Atch and News of his debt.

-Gave Miami 2 1/2% (after 10% to stockholders) on
 profits of this evening

503 The Edison Electric Light Co. Nov 1st 1887
 Edison told me today that the Light Co
 had talked with him in money and
 stock for the \$60000 they were obligated to
 pay him before they could pay a dividend.
 This was done Oct 31st - I am entitled to
 10% of this so I expect it.

504 The Universal Supply Co. Nov 1st 1887.

June. Sales.	\$12,66	Genl Exp.	\$38.40
July. "	\$108.54	"	\$46.22
Aug. "	\$1061.64	"	\$407.25
Sept. "	\$1960.90	"	\$499.69
Oct. "	"	"	"

505 Hastingshouse System

Hastings told me today that Huntford had
 gone over to Hastingshouse System and

taken the Man Construction Co as well as
 Andrews, Spencer, Goodday, etc etc with
 him - That they are delaying very much
 the Central Station at Columbus. O. in
 consequence

506 Photographs

Nov 5th 1887

I drove over from Orange today with Kate
 to Montclair to look up property - We
 called at Bloomfield & saw the new
 ship for manufacturing photographs -
 Mr Keller superintends & has about 12 or
 15 men working on boats etc. They have
 not received the model from the labora-
 tory at East Newark yet but expect it
 every day - They have about 20 new
 good tools all ready to manufacture -

507 Soliman

Nov 6th 1887

Apr 1st & date. 15 M 15 F 6 F 6 F 6 F
 Y M 15 E 15 E 12 E 11 E 11 E 16 E 15 F 1 F 6
 M 6 M 1 E 6 F 6 F 9 F 15 F & F Y.

508 Orange Laboratory

Nov 10th 1887

Boiler - flues, & stack all finished -
 Steam engine set and piped for steam and
 exhaust up to boiler & heater but waiting for
 large steam pipes for boiler & heater
 Gravel & water pipes being laid in yard.

Arrington engine beds set up —
 Dynamometer room flooring & ceiling new —
 Pumps, Steamships, Elevators and dynamo
 floor masonry all completed —
 Small room finished by Fairchild except
 lock on doors etc. —
 Received atoms & grade of experimental
 stuff from East Newark —
 Chemical room floor being laid —
 Metallurgical floor half laid —
 Chemical storage room finished —
 Galvanometer building being roofed —
 Library — ceiling — fireplace not begun —
 Main not in, railing not in — second
 floor not in
 Radiators all ready to connect to steam
 pipe and pipe all run
 Yard pipe all ready, also steam pipe
 covering, concrete boxes and blow
 pipe —
 Brass girders up but track not here —
 Gate entrance half built —
 Gas machines finished but underground
 pipe work connecting

509 Sprague Patent Nov 10 1884
 Johnson, J. & Sprague signed the papers
 attending to Jas. H. Hoffman and Power
 of attorney. Contract until July 1st 1885.

The patents are:

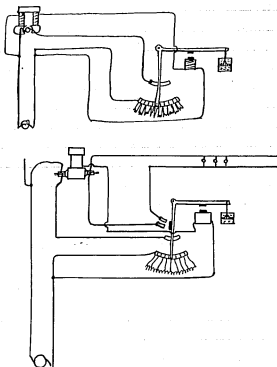
16009 dated Dec. 11th 1884
 167395 " " 3 1885
 168121 " April 7 1885
 168122 " " " "
 168123 " " " "
 168694 " May 5 " "
 169153 " May 26 " "
 170819 " Aug 25 " "
 170820 " " " "
 174045 " Feb. 9 1886

Of all the money that David Hoffman
 receives, or bank bonds or other secu-
 rities he pays over $\frac{1}{2}$ to him as follows:
 $\frac{1}{2}$ to Sprague
 $\frac{1}{4}$ to C. B. J.
 $\frac{1}{4}$ to C. B.

510 Photograph Nov 11th 1884
 Edison brought the model photograph
 to the laboratory and exhibited it to
 a number of members of the National
 Academy of Sciences who paid him a
 visit —

511 Patents
 Received Waller's Patent U.S. 393034 +
 Assignment to right to me — Little
 Sup. in of same electric machine and

relates to lighting motors or dynamo motors
at a distance



512. *Edison C. Light Co.*
Contract from the World

Nov. 16th 1897.

REPORTS OF THE BOARD OF DIRECTORS OF THE EDISON ELECTRIC LIGHT COMPANY, NEW YORK, NOV. 15, 1897.

TO THE STOCKHOLDERS OF THE CONSOLIDATED ELECTRIC LIGHT COMPANY AND IN THE PRESENCE OF THE EDISON-THOMSON ELECTRIC COMPANY.

GENTLEMEN: The Consolidated Electric Light Company, owner of the Edgewood Electric Light Company, over the Edgewood Electric Light Company, has, from time to time, received numerous applications for licenses to manufacture and sell the incandescent lamps and other electrical apparatus covered by its patents, which applications it has been constrained to decline.

With the view, however, of utilizing the inventors of ideas who have achieved success in the electric-lighting field, and to the same end of concentrating and maintaining its business to meet the constantly increasing demand for its apparatus, the Consolidated Electric Light Company has recently completed the following important transactions, which are of interest to its stockholders and patrons:

First: It has granted to the Thomson-Houston Electric Company a license to manufacture and use incandescent electric lamps and attachments, in place and exclusive right, so that the company in combination with its extensive and popular Arc Lighting System, upon an agreed royalty, and has now entered into a contract with that company, whereby the interests of both companies in the manufacture and sale of electric apparatus other than that covered by the Edgewood patents, are mutually protected.

Second: It has purchased from the Washington Electric Company its valuable electric lamp factory and equipment at Danvers, Pa., with a guaranteed capacity of 8,000 incandescent lamps per day, and has entered into an agreement with the Washington Company whereby its purchases from that company of its attractive apparatus (the most economical and efficient for central station lighting) shall also purchase from the Consolidated Electric Light Company the Edgewood lamps and attachments, for use with such apparatus, and shall have the protection of the Edgewood patents.

Third: It has purchased the stock and secured the control of the Edgewood Electric Company, which has heretofore been its sole exclusive licensee, and will continue its commercial operations through the agency of the Edgewood Electric Company.

Fourth: It has purchased that valuable and productive manufacturing and business property, 250,000 sq. ft. of land, situated in the City of New York, having a front of 100 feet and a depth, with four spans of 115,000 square feet each, for use and with a special right of easement, at that point, of the general office and of its principal plant, mechanical manufacturing and commercial departments.

To meet the increasing demand of the Washington Company, the Thomson-Houston Company, the Edgewood Electric Company and the present plan, the Consolidated Electric Light Company, within a short time, has commenced its electrical facilities at least ten thousand electric lamps with the necessary electric equipment per day and this demand, based upon the reputation for excellence which these companies have obtained in their respective fields of activities, will greatly enhance the value of its property and will promote the interests of incandescent electric lighting to an extent hitherto unknown.

This recognition of the Edgewood patents, and consequent consolidation of power in the Consolidated Electric Light Company are attended with a corresponding ability on the part of this company to govern itself from infringement of its patents; and that despite recently made laws, in the United States of law aimed against foreigners and in the violation of the same, the Consolidated Electric Light Company, it is believed, will speedily and advantageously secure to the company the additional protection that is so much to be desired in a patent system. Very respectfully,
J. H. GARDNER,
Vice-President and Counsel.

513. *Edison United Co.*

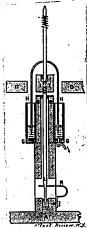
Nov. 15th 1897

Meeting, Danvers, Mass., Oct. 15, 1897
+ Edison - Edison made the following proposition - Shaw took up the case!
Contract Edison Insurance - Salary \$1000
per year and allowed to draw \$1110
more on a/c of commission -

Glas to have 22% on sale up to
\$1,200,000 - 5% if sale reach \$1,400,000
and 5 1/2% if sale reach \$2,000,000.
He to have office, clerk, stationery etc
free - and \$2000 per year allowed
for agents. He to sell as on to
own all the and out 5% to the
United Co. - Glas wants some
help to take over the time and notes
but he has not and which might give
him trouble if he left Williamsport

514. Condens. Field of Bored Co. Record

This is supposed to be an
improvement on one described
lately by Weston but was
made by Edison years ago.
It has a number of pumps
connected to the shaft which
dip in the H₂O Cup and
through which the current
passes. To regulate the
speed he has an extra
piece of soft iron I presume
above the center pole on a
spindle which revolves with
the pumps.



515. Laboratory. Nov 25th 1887.
Edison has been sick for four days
with cold - Had 80 lb. steam on
heating and live steam pipes in
the underground trenches at Laboratory
and all night - All pipes and tubes
laid and trenches being filled in.
Putnam 6 1/2" Raths set up in form -
Chlorine and Bromine being set up -
Belts being put on Brown engine
and other shaft - Water connected -
pumps all connected - Bowers all
had pressure steam on - Water and
gas meters being put in now

516. Edison Ore Milling Co. Nov 26 1887
Received from N.C.C. eight hundred
shares for past services -

517. Laboratory Dec 1st 1887.
Master & Lay conductors for lighting
Edison's, Barker, two Candelabra have

518. First wire system - Dec 1st 1887
Stevenson & McQuinn here at Orange N.J.
today talking over first wire system
with Edison - He explained his method
of throwing over a house on any side
from station - Tail, Jinks, and

Stearns were at all day yesterday also
with J. A. G.

319

Photograph

Dec 2 1887

M. E. told me today that the patients
were all void today & the fact that the
Greek patient was pitted previous to the American.
It is therefore open to the public and anyone
can go in and manipulate —

320

Mr. H. Barclay

Dec 3, 1887

Son left Harlan today by rail for
Liverpool

321

Dynamo #28 Edin.

Dec 6 1887

140 Volts, 500 Amp, 650 Rev.

Figures same as Dyn Exp. 132 & Record 927.

Armatures - Core 35 1/2" diam, 25" long, 15 1/2" high

96 divisions

Three armatures were made

Holding

*1 one 1/4" round wire once round

*2 four 3/8" Ang. bar once around

*3 four well rounded square

wire 2 1/2" wide

Revs. *1 1000 rpm, *2 1000 rpm, *3 1000 rpm

m. all cases one leg and 48 bolts —

*1 Box of field 18"

*1 Armature was tested see 722-143

*2 Armature was wound continuously by all
around and each wire had a 1/16 wire cov-
erletted to it at Commutator end & connect

it to the commutator

*3 was wound in the ordinary manner and
regular output —

Magnet Core - 17 1/2" dia, 24" long, wound
with 700 lb #12 (wp) Revs. 16 1/2 chms. —

Extra 5 1/2 ohms. —

The last on #3 armature shaved —

AM. 5:30. 46 1/2" 2500 Rev. M. 16.3 A. 1000p End

7:30 2 37" 21 500

8:30 3 40" 21 500

9:30 4 42" 20 500

Shut down to field brush, lighter clutch & down —

Start 11:50 L. 41" 21" 600

12:50 46 1/2" 21 600

1:40 48 22 now reduced to 600

2:00 46 22 500

3. 47 21 500

3:30 47 21 500

Shut down Temp of air 80° at center + 1/4" at top

Revs of arm 1000. Temp case from me 67°

Revs 67°

Start 4:45 47 - 23 700

5:45 52 - 24 700

6:45 54 - 26 now reduced to 600

12:45 58 - 22 600

Temp Am 97 1/4° Mag Rev. 17 1/2, Magnet

bare 1 mag, Am. Rev 1 mag.

Temp fuel oil in thermometer near arm.

when running —

522. Universal Supply Co. Dec 9th 1887.
 Taylor & Co found that this Co was not being
 managed economically and was resolved to
 put in Rawson & manage it & if necessary to
 take it entirely into his own hands.
 Business falling off & General expenses increasing
 rapidly each month.

523. Soltau Dec 10th 1887
 Nov. 6 to date 656218129172253—

524. Automatic Regulators Dec 11 1887
 Find from a letter from Field that they are
 still making single resistance regulators
 for regulating three machines together even
 when the running of machines is intermittent—
 him recommending keeping of all magnets
 charged even though only one machine is
 in use.

525. Universal Supply Co. Dec 13th 1887
 Taylor, J. Rawson, Fisher & Child had a meeting
 result of which was that Child's is manifest
 and extravagant. He has lost about 3/4
 of what we put in. Agreed to take 2000
 of Taylor & Co stock at par if Taylor & Co would
 loan money to U.S. Co. This was not accepted
 but thought Fisher would send that he will
 sell me 2000 worth of Taylor & Co stock

at par and he will put the money into U.S. Co.
 He will also after Jan 1st take hold and run
 it himself to show us what can be worked up.
 I have taken that offer & told Fisher to name
 any time in which he wants to buy the U.S. Co
 stock back and I will give him the option
 to do so at same price and further if he can
 not take it at the time specified I will
 give Kneen & Taylor the right to take 5
 each of it at par for a certain time after.
 I therefore gave Taylor a note for \$1500⁰⁰
 to make the transaction and return me
 the balance in cash—

526. The Edison Electric Light Co Dec 17th 1887
 Liver and Chinnick at Orange talking over
 United Co matters with Edison. Edison went
 for him about "Grove Allen" and "Edison of the
 Secretary". Chinnick said the profits for Nov.
 were \$2000 including about \$500 which is due
 to the 1/4% reduction in notes given to the Physics

527. Edison House Dec 28. 1887
 Let up Edison's house tonight for first
 time for laboratory. Only one day name
 and his house is not two wire system - No
 catch box in apt.

528. Wiring houses.

Dec 20. 1897.

I find that wiring men are bunching wires of same polarity in same groove in house - It shows they do not know or appreciate the danger of so doing -

Diagram shows two wires of each polarity from dynamo - Both wires from X are bunched above their safety catches A+B, and in bunching they are crossed or partially so at C - In time

a cross occurs at D & if not got out quick sparks another at E - If C is rubbing contact catch D goes & C springs out & then burns everything round C whilst A carries the current -

529. Notes -

Dec 20 1897

(Re) Receipts of S. Johnson 5 lbs. as payment for Dec 21st.

530. Universal Supply Co.

Dec 28th 1897.

Fisher, Taylor, Pearson, and I met at the Co's office - He found had met T. Fisher, had recognized & W. Pearson had been elected President - He talks was light on the understanding that he sells on commission from 1st Jan 1898 he being allowed 60 cents per month

for his expenses which is to be deducted from his commission - He is to work entirely on new business & is to get 1/2 the profit in all cases - tomorrow he brings - Fisher takes 2000 worth of the stock & help along.

531. Thomson Generator

Jan 2nd 1898

Address of Pittsburgh expresses a Thomson battery in which the current not to be kept



not by liquid or by gas -

It will be difficult to get insulation for fire and water and where gas is used I will be difficult to get an insulation that will hold it - A great deal of current will be lost through the medium.

532. Taylor & Co.

Jan 10 1898.

Jan 1st Statement

Rece. 494 Rec.	8992.87
Paid in Bank by Dep.	16101.91
Outlaye T. & Co. Jan	7129.00
Outlaye, H. & Co.	23975.34
Total & Appl.	15322.61
	<u>\$ 71301.49</u>
Dec. Re. pay. C. \$3635.76	16163.76
Repay. 13502.00	\$ 34666.03
Rece. of 3000 in Bank & H. & Co.	13000.00
3000 in Bank & H. & Co.	<u>\$ 41666.03</u>
Capital Invested 20000	

533 Edison Lamp Co Statement 1st Jan 10th 1892
 Rev. S. E. Smith, Pleasant
 Lamps on hand Dec 31st 224,753
 " Manufacture 81,249 car. 263,642.91
30 6002

Home shipments 19447
 Foreign " 14910 85,394.49y 31,362.29
 Lamps on hand 220,605.

Home orders 89,213

Foreign " 146,280

Totals 1,354,113

Bills payable \$774,80.97

Ordering Glass Mts. 114,48.97

Acc^{ts} Due 31,665.06

\$110,632.96

Bills recd &c 716,822.27

534.



535 Universal Supply Co Jan 24 1892
 Fire last night burned out the top
 part of building & damaged us 4

water & about \$200

Made arrangements at Putnam house to
 night with Gray & extend both notes that
 we owe him for one year from date of
 coming due. Expected to pay no more
 money to Childs and to break entirely with
 him from today.

536 Edison Lamp Co.

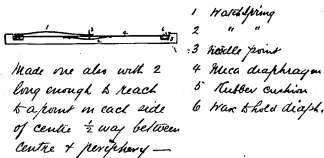
Total Account \$62011.21. Last Acct. June 27 1892

Item	Assets	Liabilities	Per Am.	Rev. Paid
1112	7,25,472.23	66,922.52	76459.71	
1113	170,891.83	61,618.25	102,273.58	
1114	212,343.43	71,692.45	140,650.98	
1115	251,880.72	64,506.09	187,374.63	\$16,250. -
1116	345,085.41	80,445.98	264,639.43	20,000. -
1117	453,373.76	142,427.49	310,946.27	33,750. -

Item	Gold.	Bringing	Acc.	Costing	Acc.
1111	34,597	\$13,175	31 st		
1112	202,669	\$91,250	45	\$107,870	33 rd
1113	333,247	\$139,758	42	\$123,762	37
1114	370,073	161,063	44	\$129,987	35
1115	432,291	183,070	42	\$107,409	25
1116	623,445	258,809	41 st	\$155,644	25
1117	826,871	343,263	41 st	\$207,636	31
	2,522,213	\$1,191,168		\$822,300	

541. Compressing Snow Feb. 20th 1888.
 Tried an experiment to compress snow. Found
 that with my wet snow 10 atmospheres
 would only compress it to $\frac{1}{2}$ its volume +
 25 atmospheres would compress it no more.

542. Toy phonograph 1 Feb. 23rd 1888
 Mica diaphragm with springs on 24
 gave loud talking without the objection-
 able extra metallic sounds.



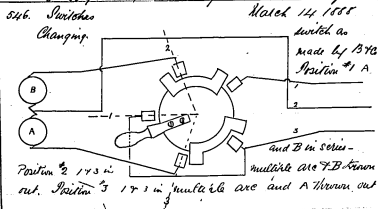
543. Weight Feb. 26 1888
 $169 - 6\frac{3}{4} = 156\frac{1}{4}^{\text{lb}}$ Nailed.

544. Polarization of Aluminium Mch. 5 1888
 Made soap & voltmeter of platinum &
 Aluminium in acidulated water only let
 the current through one way, that is when
 the H is joined at the Al plate - then
 the O is joined at the Pt plate the current
 ceases altogether. The surface of the Al does

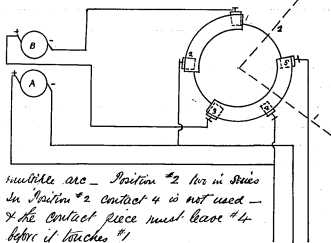
not appear to be altered, being protected by
 a thin film of aluminium on removal of
 which the polar returns.
 It seems true that this may not be an oxide
 but that the oxygen has such an attraction
 for its surface that it covers it to a greater
 depth than any other metal and unless
 by insulates it from the contact with
 the liquid -

Continual reversing of the plate would
 probably disturb it & allow the current
 to pass. A current of air would disturb
 the gas but not the oxide if it was formed

545. Toy phonograph. 2. Mch. 6 1888
 Made a small phonograph for clothes, etc.
 with an automatic return motion so that
 you simply turn always in one direction and
 it says the same thing over and over again -

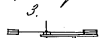


Switch prepared by Baum for knowing two days
in series or multiple arc - Position $\frac{1}{2}$ too in



multiple arc - Position $\frac{1}{2}$ too in series
In Position $\frac{1}{2}$ contact 4 is not used -
The contact piece must be cut "4"
before it touches "1"

Exp. Gay Monograph. Mel 31st 1885.



Instrument -

Cylinder $2\frac{1}{2}$ " thin depth $\frac{1}{16}$ "
Short point - rigid brass point
holder $\frac{5}{8}$ " thick & $\frac{1}{2}$ " wide at point & $\frac{1}{4}$ " where
shoes goes through - Graphagon Automatic
Cylinder return & turning always in same
direction repeats always same thing -
Reed is shellaced & thinned at top
Cylinder covered with polished copper foil
 $\frac{1}{2}$ " thickness thick - Very good talking
but in repeating the work is too close
by the reed is great & at short

Distance the talking is is shorter the fore -
The $2\frac{1}{2}$ " depth is too large as the travel
I make added bit width makes the opening
after too wide to go in the coil - $\frac{1}{2}$ " is as
much as we can allow -

#3. Then made third -

Depth $\frac{1}{2}$ " depth - Reeds "02" - Graph "02"
reed holder spring brass $\frac{1}{2}$ " & $\frac{1}{2}$ " & "02" thick
T. arm - Very low - equally as good as
#1 -

#5. Graph $\frac{1}{2}$ " of Cylinder wavy "09"

Brass arm "015" - Good but rattle -

#6. Graph $\frac{1}{2}$ " of Cyl. wavy "011" thick -
Brass "041" thick - Good talking - no
rattle but low.

#7. Graph "011" Cyl. wavy - Brass "031" thick -
Good talking - low but no rattle -

This was about same as #6 - Graph. was
planned a little more which accounted for
it over balanced the effect of thinner spring -

#8. Graph $\frac{1}{2}$ " of Cyl. wavy "011" - Brass "020"
Talking plain showing brass too thin

#9. Graph $\frac{1}{2}$ " of Cyl. wavy "011" - Brass "030"
Talking ceases

#10. Graph $\frac{1}{2}$ " of cyl. wavy "003" - Brass "030"
Good talking - but in the case reed
a little sharp so that it is louder
scratch -

#11. Graph $\frac{1}{2}$ " exactly same as #10 but

under the coffee pot. we put a sheet of tracing cloth - This was so shy however that we could get practically no talking at all as it did not let the needle indent the coffee sufficiently. We got the talking but very low or I should have thought it was out of adjustment.

*12. Same as *10 but needle pointed a little. Track shallow - Talking loud & not as much socal as some have given - Record looks sharp & clear.


Note - If you want loud clear talking you must have a very rigid lever to hold you point & then the groove must be shallow. When you reproduce with the same point that you transcribe with you will always get the socal - No thing to do is to get the record on the fork with means in in *10 & find some other way of taking it off but means that will not socal & will reinforce the talking.

*13. Up to this time we had been using 24 beads on the grinder sharp at the top but now we had them dulled until they were divided about 60 feet & 40 beads - Gauge 18" mica 900 - Brass 950 - Groove lighter - We ran the half over to become smoother that was excellent talking except the socal and -

*14. Made a diaphragm for 13. Hard subtle top - fine brass wire needle just to diaph. of elastic -

very good talking - no socal - very low -
*15. Reverser for 13 - Mica diaph 900 - Brass wire needle no socal, good talking - but too low
*16. Reverser for 13. mica diaph 900 - Brass wire needle rigidly fastened & diaph. by a piece of wood shellac - louder talking - and much socal -

*17. Reverser for 13. Mica diaph 900 - Brass wire needle fastened to paper top 9 x 12" long one by fine insulated wire - no diaph. between the needle and the diaph at top of cone - very fine talking - no socal - but low -
talking quite natural -

*18.  I now took a 2 1/2" depth of 900" and used a 950 brass spring & point flattened sideways. I talked on to a sheet of copper - So receive the I made a reverser of cardboard about 5 1/2" x 4" long that a piece of straw-board on top for a diaphragm - Good talking - no socal - a little low - talking quite natural - if we can reinforce this sufficiently it would be perfect.

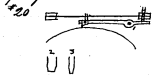
*19. Substituting the same brass point holder for that did the talking for the diaph was point brought in all the socal & even increased it as the card board acted as a resonator.

We called a night of work of Nov 30 & 31st

April 6, 1899.

During this week I have worked all night

free night on the toy phonograph and have got good results.

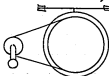


First view as 2. The receiving needle bent down as in 4 & drawn into position as in dotted line & held there by a loop of belt shellac'd

the diaph. Receiving diaph. has a sketching device & is made of softening cloth shellac'd - Rec. needle ground as 3 chisel shaped & not more than 60% of width of talking needle. With this on copper foil the talking very loud and clear with a rec. diaph. of only 1 1/2" diam -

21 Cylinder made of a mixture of Cephast & Ceraamba wax which is quite hard we got loud talking & clear with no scratch - The ramp in the case should be ground so as to start out and not tear as of the surface of the wax so that the scratching becomes very bad.

22 Made a toy of one single wheel around which is cut one groove & the words are all put on one turn of the cylinder



23

April 14 1888.

Made small cylinders of lead, pewter, & solder (half lead & half tin). All worked but tin

is the best giving very little scratch - On the regular phonograph they worked very fine -

24. I find that I require to have about a certain speed before you can get good work on the toy.

The regular standard phonog. works at about 530 inches per minute - Our best talking toy

at about 900 when talking on the copper foil -

By shown at 22. when run so as to be able to talk in it and the cylinder left small enough to go inside a shell is only about 250" per min.

This is not much good talking & what is put on comes too quick - If you talk too continuously it repeats too quick then should be a pause -

25. I have made me now that has 600" per min & 4 turns instead of automatically knowing

the diaph. back - it is done by pressing a button in front of the shell. A is brass drum on

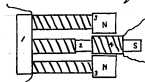
which a coat on half its rim a ring of tin B. A is cut like a screw - Bar C is fastened to the ring that holds the diaphragm

4 on it is held the knife that engages in the screw & pushes the diaphragm along - E is the talking needle & travels in the

record made on the tin B. Very good & practical -



549. Electric Rock Drive - April 14 1888.
Have made for Mr. E. some experiments that
he gave me in February in regard to a new
electrical device for rock crushing - Hammered

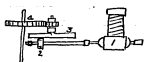


in "Rock & Co." 197. -
1 is a magnet having two
N pole S.S. & one south 2.

The S pole extends out
some distance beyond the
two N pole - A solenoid 4 is placed on this
extended pole and a reverse current sent
through it alternating about 500 times a second
this makes the short magnetize rapidly &
with great force - By this means you can
get a very long pull for a magnet - the
model I made pulls about 4 inches & moves
in through slightly until the solenoid is
in such a position that the lines of force
are about normal again -

549. Electric Railway - April 16 1888.
Mechanical device -

Have made a mechanical device for
Electric Railroads that is a decided ad-
vance on anything previously done.



1 is a motor of any
make driving a small
friction wheel 2 which
can be moved along the

shaft at will - This drives the friction disc
3 which in turn drives shaft 4 by wheel
and pinion - Shaft 4 drives the wheel of
the car it is attached to -

Motor 1 is always running in the same di-
rection - speed is varied by moving the
small friction from the periphery to the
center and the car can be made to run
backward or forward by setting the
small wheel on either side of the center of
disc -

550. Toy photograph. April 16 " 1888

Have decided to make a photograph
like the regular photo. but provided with
a cylinder to take a number of ten rings
on - Thus we can take at least 15 times
& take them off & throw them on the
trip - If we can have the board set
on a cylinder a large number of times
& then cut the cylinder up into small
pieces & throw each piece in a box

551. Amature Experiment

April 30 1888

Some time ago I made an experi-
ment to see what effect there
would be to a an amature
putting its own lines of force. They were

High. - Resuming this experiment I find that when the armature is driven (with its field magnet on) & a current passed through it whilst it is running a current of 50 amperes is reduced to 35
 " " " " " " " 22
 " " " " " " " 16 " " " " " " " 14



Magnet around in the position but no wire attached

49 amperes reduced to 22
 28 " " " " " 19
 15 " " " " " 10



Magnet now brought closer but no wire on

40 amperes reduced to 21
 40 " " " " " 20
 35 " " " " " 16
 24 " " " " " 14
 15 " " " " " 10

I found by taking drops every three blocks in each side of brush whilst running that the lines cut by wire generated a current on one side of brush in same direction as C on wire for the other side one in the opposite direction. Reversed brushes over and kept the armature still & found that I got about the same contrary effect.

532 Magnetization

May 1st 1899

Comparison of different metals



Shape cylindrical

6" long 1 1/4" diam.

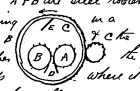
N^o of line of force Norway Iron 100.

Amperes turn

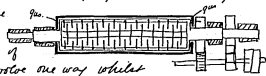
Metal	5000	10000	15000	Remarks
Iron (howay)	100	100	100	
Iron (Alston)	96.7	95.2	99	
Iron Cast.	92.9	83.3	98.9	
C. Iron 40	91.9	85.5	89.	1/2 short weight owing to flow holes
Ir. " 30				
C.I. 95				
First Man. 5	86.6	75.4	69.9	A little hard to turn up
C.I. 90	82.3	74.7	25.8	
First Man. 10				
C.I. Runnings held by Halden	40.5	31.6	29.2	

533. Alloys May 1888.
Type metal 75 lead + 25 Antimony
Hard, granular, fine, fracture —
 1. With knife cut clean + hard —
Turns smooth, easy. — into solid
65 lead 35 Antimony
Machine — coarse granular —
 2. Cuts more like Cast Iron — can
 scarcely make a shaving —
 Not solid + looks a little
 granular as if it had not
 mixed perfectly.
80 Fin 20 Antimony
 3. This is considerably harder than
 the — Cuts easy — not good polish

534. Insulation for House Wires May 18 1888
 1. Fireproof + good insulation
 Boiled lumber rolled into a
 thick mass — Put this into a mixer
 + add little by little Santa Chloride
Antimony until it becomes a thick
 mass like rubber — Had out in same
 mixer with warm water until no trace
 of acid — Work it in threading
 machine until it becomes more pliable
 — Put this on wire by a press
 square — Insulation very high +
 absolutely inflammable —

533. Insulation for House Wires July 15th 1888
 2. Same as 533 Can be made (you have
 made some last) by putting the boiled
 lumber all together with exact amount
 of finely powdered Manganese + passing
 the Oil through whilst it is in the mix-
 ture — Samples made in the way last
 equally well with 55% "1."
 3. "2 mixed with 5% Asphalt + 5% oxide
 Lime makes excellent insulation which
 gets hard after putting on wire but not
 firm enough for use
 Note — We have tried many mixtures but as yet
 have not arrived at what we want for
 hardness just after putting on a wire, as
 that it can be put on + covered at the
 same operation
 Note Made a new mangle for 1 + 2 on steel rollers
 with bearing projections running
 cylinder, 1 1/2 times faster than 2
 cylinder runs slow + catches
 mass + carries it to the top
 + shipped off + falls into the roller

 4. We have just made a compound where
 the oil is put into the mixer and the Oil
 is passed through until it gains a thick
 consistency then take out + mangle
 this we must test yet
 Note. That we want at present is some mixture
 of some thing with the above that will enable

it to come out of the 'Squirts' hard enough to go right into the water over.
Note the upright pipes are not good where a gun has got to be aimed as the material is at the bottom & gun at top. I suppose a horizontal one that will keep the material in a thin layer & shielded up the whole length of the barrel, etc. A long cylinder made to open lengthwise in which a frame work of fungus heaters are way whilst a shaft carrying another set heaters in the other direction. Outside cylinder can be steam heater & have air places to let gas in.



554.

Wire Insulation

- #2 Regular #2 macerated with 30% of Carb. lime - A little for stuff 20 added a little Euphrasia & makes it work easy - Covered 1/4" to 1/2" - heated infinitely after 4 days in salt water. It's a little soft when it goes on & stays harden after a few days.
#3 Reg #1 macerated with 16% Ox. Al. This could not be put in wire
#6 Chlorinated Oil 10% grease. 1600 gr. Coal tar 400 gr. Pent. Chlor. Carb. 1400 gr.

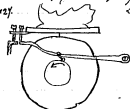
of Rubber in Bangalore - too good in Squirts - It seem to swell out larger than die -

- #4 Reg #1 with 5% heavy Asphalt & 2% Zinc Ox heated by steam in squirts - good but a little crumbly -

- #8 Raw Linseed Oil 1223 Gp. pure Zinc Chlor. to weight mixed & precip. poured away - consistency of thick molasses - Boiled all water out - then cool put Coal tar 344 Grammes & Lin in mixer - added whilst there 1150 cc. Pent. Chlor. Carb. 11 hours come out thick - washed in hot water till in acid. This goes in excellent & only wants to be a little harder - It's good enough to try a large lot - It's an excellent insulator & cannot be burned.
Note: How many other experiments were tried between July 15th & the date -

557. Iron wire. Amateurs. Sept 7/1888
 Am making armatures for the new
 Multipolar dynamo & transformer of
 fine iron wire (sawdust) & wound up
 loosely - then put on a former &
 with hydraulic pressure pressed into
 shape

558. Toy phonograph. Sept 7/1888
 Device for lifting the needle
 for spring machine when
 winding up in the machine -
 Winding up in direction of
 arrow & then lift the lever
 and therefore the diaphragm



We used the spring up with a 15 lbm
 Geneva stop -

559. Phonograph. Sept 10/1888
 New needle to cast on uneven surfaces
 made by Edison consists of a needle
 jointed & carrying a vane at
 the other end - The vane
 is not affected by the vibra-
 tion of the cylinder (it offer-



ing too much air resistance) and acts as
 a movable fulcrum allowing the needle to
 follow all the irregularities of the surface
 of the wax & at the same time transmit
 the vibration to the diaphragm

I shall make use of this for the toy doll.
 Make the point a little longer from the
 joint & make it travel as well as go up &
 down - As I can cut a '008 groove I can
 get about 13 lines in '161" or thereabouts
 & I am sure the needle will play that far
 Co -



560 Multipolar Dynam. Dec 5th 1888.

Tested

16 Field Cobblers in 5 series of 3 and one in extra circuit making 6 circuits in parallel -
Set from 7:45 p.m. Dec 3. to 7 a.m. Dec 4 and
was interrupted twice to fix brushes & take temp.
on surface.

1015 at terminal started at 130 & ended 112
Pin field began at 62 amp or 10.3 beach spool
& ended at 47 or 7.8 beach spool
Load 810 & 740 amp.

Time of running 8 hours.

Highest temp. arm. 260 F.

Only feature calling for improvement was the flanking at bushes - did not increase with load & probably will be overcome by balancing the mag. power of the field coils - No one was doing this

561 Cilloys. Feb 21st 1889

4. For vessel to hold acid or alkaline solutions during experiments

Copper 15 pairs.

Fin 2.34 "

Lead 1.82 "

Autumn. 1 "

562. Monograph March 4, 1889

Had a small spiral spring
put under the head of the Shift
adj. screw so:- Without this
it works loose.

Dec 19 1889.

New models of Rec. Vesp sent to me today

Rec needle 240" wire cupped in
+ shaft 025"

Rep. needle 0.35" ball with

225" Shank: This last 6

a morally well limited

in its movement & working Graph. against its inertia -

563. Dynamo (Edison) Apr 20 1889

*60 140 v 1075 Amp. 450 Rev.

Ann. core 23.45" & bore 23.245" diam.

End plates $\frac{1}{2}$ " wide at top, larger near shaft.
82 divisions for 0625" fibre - 82 "P" each
section. 4 plate to the Arm.

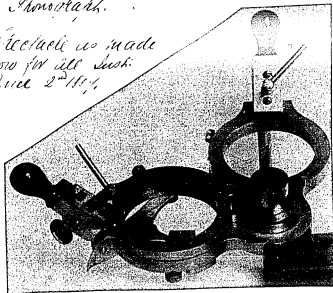
Winding - 19 " 9 1/2" x 11 1/2" in a strand
of two complete turns in 25" compressed
into shape - 19 then strand was around
and to back. Decorative was wound with a
dummy first & the regular wire shaped
that on. It could also be wound with
12. 1/2" wire - Both above are decorative
winding

$\frac{8y^2}{82y}$

568. Amatures for Photograph
 The first 1000 made were of very pure iron
 in sheets $\frac{1}{8}$ " thick and 13 of these put
 together. This was cut by a ring punch
 out of a sheet of iron about $\frac{1}{16}$ " of all the
 iron used. The speed of cutting the lines
 of force is so small (only 6 feet per second)
 that I felt sure the Foucault currents
 were practically nil. Had no made of
 cast ~~iron~~ and it worked about the same
 not more than 5% difference. This
 makes quite a saving on the cost.
 June 14 1877.

568. Amatures.

1000 made
 cost for all work.
 June 2nd 1877.



569. Incandescent Lamps. July 13 1877

Showing shown before the Physical
 Soc. of London the "Edison effect"
 Galv. between + + middle plate
 shown current, between - middle
 no current - when negative leg.
 shielded by glass or metal shield
 no current bet + + middle. The

cap it is evidently due to Convection of Carbon
 particles in residual gas.

570 The Edison Gen. Elect. Co. July 13 1877
 Rec^d from him in exchange for my stock -

Cash	\$88.435
Reg. Stock	181.900
Def. "	103.700
	<u>\$374.035</u>

571 Resistance of the human body
 About 250 men & boys were tested for
 resistance at Lab. & Marsh Walk.
 With the hands placed in a 10% potential
 solution they averaged about 1000 ohms
 varying from 1100 to 660. With the hands
 touching, & grasping the wires according
 to the amount of pressure the body would
 vary from 10000 to 250000 -

Edison Monograph

1899. Olden	Monograph	blades	Shipped	By sea	Baked	2c	N ^o
Day	3	5	67	2993	58		406
10	31		35	3086	25		445
17	68	246	49	3190	00		443
24	84	233	53	3164	61		480
31	29	229	77	4253	80	143 34	471
	217	408	281	16488	04	14134 34	
4	18	196	27	2029	73		419
14	42	273	67	4201	61		448
21	92	288	54	2672	73	12963 49	480
28	56	237	118	7667	55	10564 58	473
Oct 5	51	130	56	81783	52		487
12	12	100	81	908	90		436
19	19	17	17	1667	73		429
26	26	41	46	1461	94	19963 43	342
Nov 2	15	8	95	31458	17		348
9	0	0	0	247	94		318
16	311	0	0	573	47		320
23	20	6	17	388	10		352
30	19	73	56	41921	46	23614 06	368
Dec 7	37	158	176	4160	99		354
14	634	213	216	3136	36		420
21	190	241	226	2400	81		448
28	130	141	142	1817	11	27288 08	508

North. Statement

Per 1000	Cylinders	Molded	Lat.
4709 01			
4821 14	5743		
4880 24	5460		
5137 85	6980		
5297 42	8005	9226	
24845 66	26190	9226	
4403 17	7028	1050	
5371 18	8960	1086	
5406 04	8360	1300	
5442 47	8280	3644	
14415 24	5080	2700	11-34 per week each
4729 53	7787	2088	1088
4317 37	—	2770	12-07
4052 97	—	1974	11-13
4167 10	1268	3094	
3829 87	7350	1074	
3627 21	9588	3150	
4118 42	10610	600	
3160 95	10000	2444	
4612 82	12010	6018	
5083 86	13520	3012	
5844 83	13440	974	
4088 95	8800	1248	Bluewing West.

* Leland. Edin. Bally. App 12 1889.

Cost today on an output of 40 complete
phnograph batteries per day.

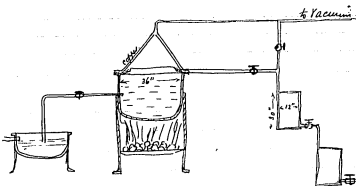
	Labr	Mat.	Total
Bar box	20	592	
Lead	13	624	
4 Glass		56	
4 Cords		14	
All accessories	06	433	3.06
Dist. Rate	244	1.062	1.310
Ampr	144	1.878	2.022
Soda		44	.44
Grand Cpt. of 40 per day			.41
Dep. in 9000 at 5%			.80
		Total	1.06
Royalty on 12 lbs			1.20
25% Prof. on \$1.05			2.01
			11.26

At \$15.50 bat we can afford to give
25% to the special 25 & 5.

Apr 12 1889.

Recovering Stearine from Phnograph Hcs.

Decomposition of old wax by an acid
purifying and separating the part by
distillation in vacuum.



Steam distillation would answer but then -
Gross & troublesome - Vacuum about 14 in/
We can recover about 92% of Stearine Acid
& Stearine

585 Thomas O. Edison

THE WARD TO MEET HER FROM CHICAGO.
Jaffa, Sept. 15.—Thomas A. Edison has gone to
Hedberg. He will return to this city to submit
the prospectus to Eugene Phillips, James H.
Smith and Count Von Sotom.

876 Edison Transformer #10 Sept 12, 1899
 1080 V - 18 a. h. 110 V - 15 a.
 General dimensions same as a #16 transformer.
 Arm. core 8.5" x 8.125 at base - 92 lbs. 10/1000 lbs.
 Winding - 1 #16 AWG. 9 turns round 4-46 blocks
 + 9 #16 " 1 " " " "
 mid 9 #16 just for $\frac{1}{2}$ the low volt. then
 1 #16 " high " , then
 finish in same manner
 Res. = 0.0153 Ω and 1.23 Ω
 Weight 24 x 26 lbs. less the paper in coil
 4 papers in body + 2 papers 1/2 inch between
 layers.
 Magnet. Reg. 16 A. mach. Est. Res 450 Ω in
 1000 to 1050 volts. Magnet. 1000 Ω

Test on above Mch. Pt.

V. Min.	Imp. P.	V. Sec.	Imp. S.	Res.
1050		115		1650
1020	62	111	40	"
1060	21	110	160	"
1045	11	110	79	" No sparking -

Heat in Armature same as a #10 mach.
 Weight 3600 lb.

587 Transformer Sept 1899
 With paper on same in comparison with
 5 x 3 coils 3 wire at Niagara Falls mfg.
 of Edison. Co. Ill. Co.
 He finds the double 3 wire for the transformer
 the 3 wire 4 transformer are equal at
 4 miles, beyond that the 3 wire has the
 advantage, nearer the 3 wire.
 The 3 wire is not supposed to be commercial
 at this however at 24 per cent. the 3 wire would
 be
 $\$22.00$
 $\$4.47$ cost of 3 wire
 $\$11.523$
 $\$9.90$ cost of energy del.
 $\$12.033$ net expense of producing

7 hours making the energy.

See diagram #4 in diagram book.

588 Monograph Battery test Sept 21, 1899
 To compare the relative behavior of East
 1 or night non armature in New a East arm
 armature motor with a 4 cell Leland &
 Battery that had already run one turn
 It was kept taking off a chip the entire
 period - It failed 5 times after 50 hours -
 The battery was cleaned and recharged -
 It was then set to work on a motor with
 a wrought iron arm. under similar condi-
 tions - It failed after 47 hours - Another
 test was made between these two machines

with two Bichrom. cells, regular shows. Chlorine Acid type - 2 cells in series were used - The wrought iron armature ran 4 hr 50 min - the Cast iron one 1 hr 30 min -

A third test was made with 2 phones one with Cast iron & the other with wrought iron armatures - 2 phones 4 cell Saline. C. bat. were made up one for each and not in driven light, they started 11-21 volts 16 left and stopped at 21 volts 17th in case of the Cast iron and 6 volts in the 21st in the case of wrought iron runs of 76 & 103 hours respectively -

Batteries were then recharged, zinc amalgamated & the armatures exchanged - the Cast iron stopped after 2 1/2 hr. resistance being 0.48 ohms - the wrought iron one stopped after a continuous run of 85 hours -

A motor with wrought iron armature was set running by a battery whose plates had been cut down to half width - It ran continuously for 60 hours when the int. res. became very high -

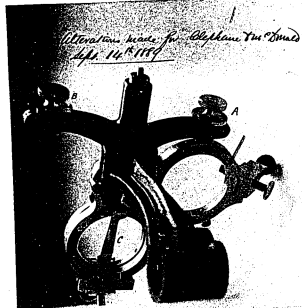


The speed of these armatures is only 6 feet per second (cutting speed) as that I don't think Foucault currents have anything to do with the difference, although the Cast iron armature is said to be wrought iron one is made up of thin plates 1/8 in. thickness to the core.

I think the reason that the wrought iron one runs longer on the same battery is because of its greater permeability.

389. Photograph.

Sept. 14 1889



590 Big Bend, Linnell & Mining Co

COMPARTMENTED COMPANY FALLS

MINING OF MATHEW MONROE, BURE IN
THE STATE OF A RAYON.

San Francisco, Sept. 25 (Special)—The Big Bend Tunnel Mining Company, with its principal office in the city, has gone to pieces, with a loss to the stockholders of \$1,000,000. The total of operations of this company was in Big Bend, Santa County, California, the capital stock being \$20,000,000. The day of its failure, it is president of the company, and there are several other stockholders in the city. The failure is believed to be the result of the fact that the stockholders have turned out of the stockholdership of the company.

San Francisco, Sept. 25 (Special)—The news of the failure of the Big Bend Tunnel Mining Company, which came today from Buffalo, was a genuine surprise here, although it was not supposed that the chief feature had been the undertaking as a business. The failure was not the most unfortunate event that has befallen the company.

"Old mining men refused to risk any more in it, several experts predicted that the tunnel could not carry all the water of the river, while others claimed that the working of the river bed would be too expensive to profitable. The action was to direct the waters of the Feather River through the tunnel and vent them to the street for Boston, mine as a plan called Big Bend." On the strength of August 1st of good mining equipment, many nations "under" were captured, the most prominent being in the city of Denver, the only prominent feature in the city.

Frank McLaughlin, of Little Canada, was injured there and others to forest. McLaughlin had worked on the line at the mine and claimed that the mine of gold lay on the bed of the stream, which the mine could not reach, because of the river current. Work was begun on the tunnel in the city of Denver, the only prominent feature in the city.

Work was completed for 10,000 feet. The tunnel was 100 feet long, and the city of Denver was 100 feet long. The tunnel was 100 feet long, and the city of Denver was 100 feet long. The tunnel was 100 feet long, and the city of Denver was 100 feet long.

It was found that the mine was 100 feet long, and the city of Denver was 100 feet long. The tunnel was 100 feet long, and the city of Denver was 100 feet long. The tunnel was 100 feet long, and the city of Denver was 100 feet long.

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591 Thomas A. Edison

THOMAS A. EDISON HONORED.

Paris, Sept. 27.—The Grand Cross of a Commander of the Legion of Honor has been bestowed upon Thomas A. Edison. Mr. Spuller, Minister of Foreign Affairs, in considering the decoration upon Mr. Edison, said it was given in honor of the services rendered by him to science, and for the part taken by him in the Paris Exposition.

Mr. Spuller said that America was splendidly represented at the Exposition, and that the presence of the exhibits destined to be seen by the world had been made possible by the efforts of the American people.

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592 Photographic Tunnel Sept. 29, 1889

Best Angle of Camera



593 Battery "A" Belmont Station Oct. 3, 1889

	Starting Battery	1.00 Pulse	1.00 Pulse	1.00 Pulse	1.00 Pulse
Time Oct.	2.46	1.062	1.00	1.00	1.00
30.5. 1889	1.01	1.266	1.00	1.00	1.00
40.5. 1889	2.10	1.05	1.00	1.00	1.00
Regally	1.00	1.00	1.00	1.00	1.00
	6.50	2.534	1.00	1.00	1.00

He since has 8.5. 1889 at 10.30 & 10.40
He since has 8.5. 1889 at 10.30 & 10.40
25% off 20.1

Battery	1.00 Pulse	1.00 Pulse	1.00 Pulse	1.00 Pulse	1.00 Pulse
8 Oct. 1889	2.40	1.00	1.00	1.00	1.00
9 Oct. 1889	1.00	1.00	1.00	1.00	1.00
10 Oct. 1889	1.00	1.00	1.00	1.00	1.00
11 Oct. 1889	1.00	1.00	1.00	1.00	1.00
12 Oct. 1889	1.00	1.00	1.00	1.00	1.00
13 Oct. 1889	1.00	1.00	1.00	1.00	1.00
14 Oct. 1889	1.00	1.00	1.00	1.00	1.00
15 Oct. 1889	1.00	1.00	1.00	1.00	1.00
16 Oct. 1889	1.00	1.00	1.00	1.00	1.00
17 Oct. 1889	1.00	1.00	1.00	1.00	1.00
18 Oct. 1889	1.00	1.00	1.00	1.00	1.00
19 Oct. 1889	1.00	1.00	1.00	1.00	1.00
20 Oct. 1889	1.00	1.00	1.00	1.00	1.00
21 Oct. 1889	1.00	1.00	1.00	1.00	1.00
22 Oct. 1889	1.00	1.00	1.00	1.00	1.00
23 Oct. 1889	1.00	1.00	1.00	1.00	1.00
24 Oct. 1889	1.00	1.00	1.00	1.00	1.00
25 Oct. 1889	1.00	1.00	1.00	1.00	1.00
26 Oct. 1889	1.00	1.00	1.00	1.00	1.00
27 Oct. 1889	1.00	1.00	1.00	1.00	1.00
28 Oct. 1889	1.00	1.00	1.00	1.00	1.00
29 Oct. 1889	1.00	1.00	1.00	1.00	1.00
30 Oct. 1889	1.00	1.00	1.00	1.00	1.00

574 Edwin Salind's Battery Oct. 13 1877

Prices given to Mr. Salind:-

Battery 4 Cells empty in case
without Oxide, Plate, Limes or
Loda.

8 Oxide Plates 40¢ each

8 Limes 20¢ each

8 Loda Plates 12¢ each

8/14

3.20

2.20

46

15.60

Bethlehem, Jan. 26/8

Mr. Over 15¢

to Lippincott 25% off

to Procter & Co for China 15% off.

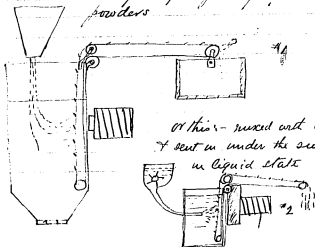
Oct 13 1877

575 John Barker Case.

Decision of Justice Bradley in favor
of O'Brien in the case given at
Pittsburgh Oct 5th 1877

576 Ore milling devices (Jan) Oct 13 1877

Water principle for separable
products



Or this - mixed with water
& sent in under the surface
in liquid state

When a double magnet is used in a loose cylinder, and the
cylinder turned in the direction
that would take the ore up
if it were not for the magnet
a peculiar twisting motion is given
to the ore which cleans it much better than an ordinary
single magnet. For Watson's very fine magnetic
tore over the process if it can be made continuous will
be very good. We find that after putting a load of
ore at X the outside cylinder should run about 200 feet
to concentrate it to percent after which a water course
is taken the concentrate over and it is charged again

1274
No. 1000



THE OFFICE OF THE FRANKLIN GOVERNMENT.

Paris, Sept. 25.—The Order of a Commander of the Legion of Honor, given to Mr. Edison by the Government of France, was sent to him through the American Legation, and it caused that a few friends for whom the present writer was one—witnessed the presentation of it to the receiving traveler at the residence of the American Minister, No. 23 Avenue Hoche, this evening. Many interesting incidents have brightened and diversified for me a day which has been all too brief in the beautiful capital of France, but no incident has touched me so deeply as this one. The spectacle of homage offered to genius is at all times impressive, but in this instance it was the delightful informality that gave the exceptional charm. The occasion was that of a dinner-party assembled by the American Minister in honor of his colleagues in the International Conference upon Weights and Measures, Dr. Gintl, of Harvard University. Other especially honored guests were Mr. Charles A. Duce, of New York, and Judge John Davis, of Washington; and the company included Mr. Chief Justice Harnden, of Louisiana; Judge Alexander H. Hagen, General Burtwell, Colonel Hitchcock, Mr. Isaacson (California), Mr. Hubert Dreyer, Chief Secretary of New York; Professor Davidson, Mr. James Otis, Mr. Fisher B. Bishop and Mr. Vignard, chief secretary of the American Legation. Judge Edison came to after dinner, and still later came Mr. Edison, attended by his secretary, Mr. W. J. Hammer. As Mrs. Reid is travelling in France, with her father, there were, unfortunately, no ladies present.

The incident of the presentation to Mr. Edison, since it had no less planned, proved equally a fortunate accident and a delightful surprise. All who have the good fortune to know Mr. Edison are aware of the genuine modesty of his disposition and the gentleness and simplicity of his manners. These few qualities of genius make him and worth were displayed themselves more conspicuously than they did in the moment when the great inventor, taken completely by surprise, suddenly found himself addressed by the American Minister and invited to accept the cross of the Legion of Honor from the President of the Republic of France. Every man in the company certainly felt moved by a deep enthusiasm, and when Mr. Reid delivered to Mr. Edison the official diploma and letter and hung the ribbon about his neck, the feeling found expression in some of the most fervent applause that ever was witnessed. Mr. Edison was deeply touched. He blushed like a girl, and, after looking at us for a moment in pleased confusion, he said, very simply: "I never in the world can wear it." A man of such fine and such headstrong genius needs no decorations; but he deserves them all.

It is not needed for any one to tell your readers how brilliant Paris is at this time, even though this is not the fashionable time of year; neither do they need a description on the marvels and splendors of the Exposition—surely the most profitable and wonderful display that ever yet has been made of the industrial art and products of civilization. My chief thought in this brief communication, is to record for you, why it is not recent and fresh, an incident that will probably satisfy every American who truly loves and knows what is best worthy of esteem in American character and achievement.

398 One building Oct 19th 1889

Gallery on from Michigan
44 Runway 36 feet long running on rollers, 15 magnets each

about a
foot apart

down against the magnet

tried different quantities of water & strength of magnet; also tried putting in a lot of ore and letting water run down until perfectly clean at same time stirring up the different little lumps over magnets

This when dried showed in the last lot 19.87 grammes taken out by magnet

670 " net
= 74.15% x 72.44% = 54.1%

very poor

On the cylinder 12" diam and magnet about 4" wide as shown in Exp. 3. The following results were got:

	3 feet	46.33%	51 lbs.	90 lbs.	70.50%
1	2	50.66	40	120	70.50
3	9	55.02	50	150	71.37
4	12	61.54	60	180	71.67
5	15	62.97	70	210	71.86
10	30	65.16	80	240	72.11
15	45	67.39	90	270	72.32
20	60	69.30			
25	75	70.22			

Capacity is small and the exp. of magnet at present is limited

599 Railroad Brake

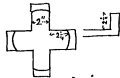


Oct 19 1889
 Set this brake
 today - All brakes
 put on in 15 seconds

Re particular case as follows:-
 Diameter iron 7" diam X 5 1/2" inside
 2" wide 7/8" round with 5 lugs for 23 lb. wgt.

83 feet in all 740 blocks -

Magnet 1" thick 4 poles & wound with 17 lb. 23 lb.
 M.G. on each leg.



Norm 5 1/2 to the inch x 2" diam

Norm wheel 200 teeth

Chain gear 3 to 1

Motor 1200 turns full load -

Driven by friction as:-

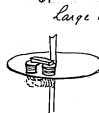


Test No.	Yr	Specifications				Load		Speed		Remarks
		Ang	Wt	HP	Wt	Wt	Wt	Wt	Wt	
1	43	10.5	69.5	160	23.5	410	125	165	23.5	Spectral line.
2	42	12	50.5	160	23.5	750	171	239	34	
3	46	10.5	99.5	164	23.5	250	77	41	16	
4	46	11	50.5	167	26	430	100	179	28	Field taking 2.5 Amps 12.5
5	52	8	116	36						

Test reliable & 10% only

600. Ore handling - Malvern 1889 Oct 22 1889

#6.



Large disc 36" diam - 4 magnets held above and one put on underneath. Centre of magnet at about 15" W. diam
 Plate running 24 per min - 100 turns made Contact: 29.5%

#7 24 ore put in - Rev. 24 per min - 18 turns Concentrate 15 1/2 lb.
 Tailings 15 lb.

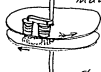
Put in Tailings again & got out 40 lb Concentrate 10%.

#8 1/2 lb - 25 Rev per min - 50 turns Concent. weight 5 1/2 lb. 70-75%

Tailings carry 1% iron
 1 lb 15 Rev per min 60 turns

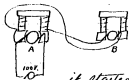
#9 Contact 10 lb 91%
 Tailings 4 14% of iron

#10



Made an underneath plate that revolved in opposite direction at such a distance that the picking up magnet would take up all the iron as it passed under. This alone of running must faster as if the speed thrown off the iron it must fall in the bottom plate & pass under the magnet again. The tailings are scraped off bottom plate at the opposite side from magnet.

602. Transformer. Testing. Oct 31 1889
 Sought to find out whether a motor or transformer
 would start up by current sent through armature
 when it had no field on.



A no. 2 C dynamo B no. 1
 driven by belt from armature A
 A current of 60 amperes was
 sent into armature A from C

it started and drove B which in 10 sec
 charged A's field & kept it down to speed
 A current of 15 amp sent through a hum 16 amp
 armature started it

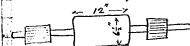
For transformer at a distance the field can
 be charged from the secondary and it can be
 started by having a few turns of the fine wire
 in the core to act as a starter with a small
 current

604 On killing Malloy ore
 A test on #13 with 9 1/4 magnets gave 2 1/2 per
 hum. of concentrate at 66 1/2% with quite some
 in the tailings

Sped 1/4 Rev. Circum 19"
 Length of tube 24' 6"

605 Transformer Oct 31 1889
 To change a #4 Edison dynamo to
 a transformer for 1050 V 24 amp to 20 V.
 and 500 amp.

Comm. 96 x 16 - 52 div -



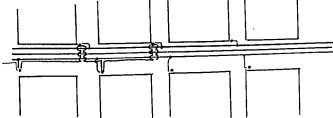
Fin wire 1 #14 B.T.S. (0.051) 9 turns around
 4 1/2 blocks & 14 #1 B.T.S. .051" once
 around 4 1/2 blocks. —

Fin wire 862 turns of 3/2 ft. - Drop 6 1/2 V
 at full load

Cause wire 11 1/2 drops on armature —

Arm edge #8 & hum #1 —

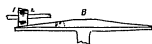
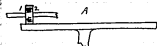
606 Arc light on Edison current Nov 5 1889
 For city arc lighting it is advisable when
 laying tube to put down a small diameter
 cable & arc lamp post at that corner



Many of us that two or four can be put in series
 across one line

607 Friction Roll. Nov. 5, 1899

Which is best for car driving a straight roller on a flat disc or a conical roller on a short cone.



In any case that we should want it for car use limited to about three sq. ft. diam for the driven and 2 1/2" diam for the plate.

Owing to the shaft of driver having to pass over the cone, and to left of cone, and also to get an easy working friction we find it difficult to use more than 8".

Supporting both drivers to be only 1" under them.

at periphery	1 - 17.27	running on 75.39	= 4.02 times	differs 2%
"	2 - 16.05	"	69.11	= 4.33 "
"	Center 1 - 17.27	"	40.40	= 2.31 "
"	"	2 - 16.05	36.55	= 2.06 "
} 6 1/2 %				
at periphery	1 - 17.27	"	75.39	= 4.02 "
"	2 - 17.27	"	69.11	= 4. "
} 9 1/2 %				
"	Center 1 - 17.27	"	40.40	= 2.31 "
"	"	2 - 17.27	34.55	= 2. "
} 13 1/2 %				

This shows that whilst neither is perfect the conical one has much less slip than the straight one and consequently will last longer.

608 Le Cellain Lalande Battery. Nov. 6, 1899

Solution used contained 25% H₂O₂ in sticks the spec. grav. = 1.120 - " was cast without H₂O, but amalgamated before test - they were 1/2" thick, jars were 4 in number and filled with solution + on top 1/2 layer of paraffin oil. Test started Oct 6th to them a photograph for 2 hrs daily at 120 rev. -

Current at commencement	2.5 amp.
" " 15 Oct	2.58 "
" " 24 "	2.51 "
" " 7 Nov.	0.45 "

as measured by Ohm's Galv.

Height of zinc before test 9 1/2 in.

" " after 7 9/2 in.

Loss 29.5 g. = 837.6 g.

Ran 62 hr at proper speed, on 7th Nov. failed being nearly exhausted.

Took 2.5 amp. as the mean current - then current 10

3 in. of cast. = 62 x 2.5 x 3600 x 0.0003567 = 1589. for all

the actual loss is 1589.4 "

zinc lost by local action 21.4 g.

609

Magnet

Nov 9, 1899

Mass of iron makes no difference.

Took 5 plates cast iron 8" x 8" x 1/2"

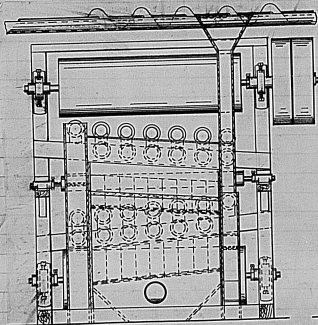
Superimposed 40 lb. for 1 magnet + 10 lb. for the other

These 2 were secured with one layer tape + each wound

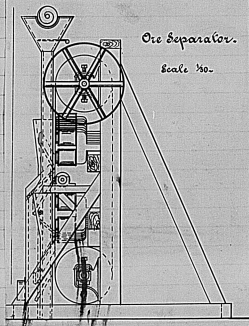
with same size wire 6300 ems long 7/8" 24 lb. 1/4 gals

616 Ore Milling

Nov 29 1889



The sketch shows the machine made for working the Malloy ore - Belt speed 300 ft per minute - Capacity not yet determined but think about 10 tons of concentrate in 10 hours.



Ore separator.

Scale 1/20.

617 Jersey Ore.

Nov 29 1889

Edison & M^c Gowan went to Dover to look over some running properties in that district they have over 100 to inspect & expect to be gone about 10 days.

Returned Dec 6th 1889.

618 Sprague motor Change Dec 2^d 1889

Edison proposes to alter a Sprague motor to run by friction so that the armature can run all the time - The way I propose to do this is as follows:-



A is pinion on armature. B is great large gear - There I make cast iron or steel friction gear of this section but do not touch each other - C + D are friction rolls of rawhide or some

other yielding material, and are so arranged that when they are brought to bear on the two wheels, if one touches first it puts no pressure on until the other one touches - By a screw I have the drive of the car can start the car gradually - The rolls can be easily replaced

Graphophone

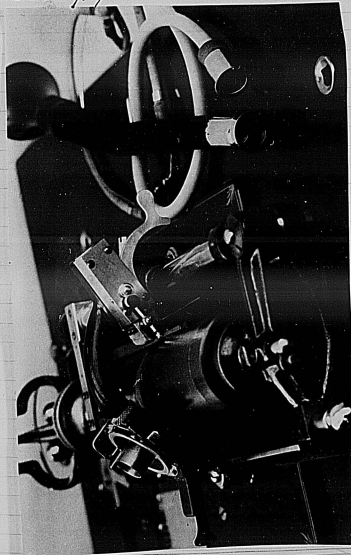
Dec 5 1889
Had a visit from Walter T. Glover of Manchester an old school fellow - He has been interested with Edmunds in the Graphophone in Europe.

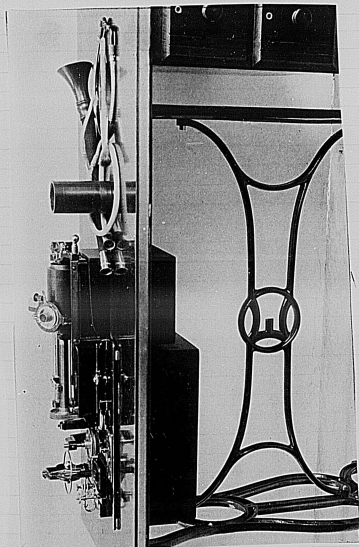
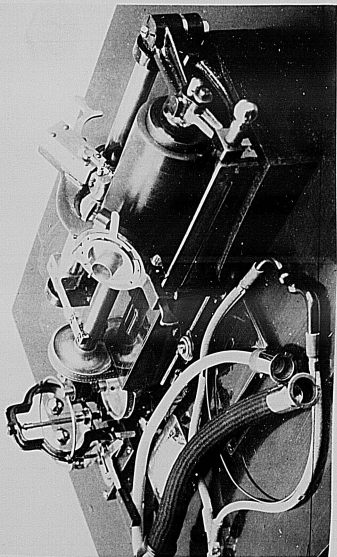
Sheet R.R.

Dec 5 1889
We are now making 15 pairs per day on the railroad track of the Orange horse road and also laying a noddle rail of iron 5"x1". It is cross-tied wood & each rail joined to the next by copper expansion joints.

619 The Homograph

Dec 5th 1889





- 620 Electric M.H. Dec 5 1899
 Table showing the energy delivered to the
 axle of our experiment car for Orange
 Street Car on the track the maximum
 gradient being 4 1/2%

Feet per hour	Car running empty		weight	
	level	1% Rise	2%	4 1/2%
1	.30	.51	.68	1.02
3	1.02	1.53	2.04	3.06
5	1.69	2.54	3.38	5.02
7	2.34	3.56	4.74	7.12
10	3.38	5.07	6.76	10.14

Car with 30 pass.		weight	
1	.51	.77	1.02
3	1.53	2.30	3.06
5	2.58	3.82	5.10
7	3.57	5.36	7.14
10	5.09	7.64	10.15

- 621 J.A. Edison Dec 12 1899
 Edison & Lath went to Canada

- 622 Edison General E.C. Dec 13th 1899
 Advantages being that a quarterly dividend
 of 2% would hereafter be paid.
 They have decided to take up the Magna

E.R.V.M.C. at pan on above the same
 terms in preferred & deferred stock (no cash)
 in the shops were.

- 623 Oilwork compound Dec 13 1899
 With this compound we find it difficult to
 squirt so rubber is done as at the tempera-
 ture that it becomes very soft as it goes
 out in oil that lubricate everything & also
 the sulphur in it makes it adhere to the metal
 dies etc. My method of running things
 from it for phone cylinders is to powder
 it up & press it into shape, then put
 the mould into an oven & heat to 270° F
 about. This just allow the oil to come
 out sufficiently & hold the particles
 together, but is not sufficient to make
 it troublesome —

- 624 Electric Light Wires Dec 15th 1899
 Justice Van Buren in Supreme Court reversed
 the opinion of Judge Andrews and awarded the
 injunction obtained by the U.S. Elg. Co. L. Beaul
 C.L. Co. & the Mt Morris E.L. Co. which read and
 the mayor, the board of Pub. Control, and the
 Council of public Men from interfering with
 their property

625 Cylinworth Compound.

Dec 13, 1889.

Place of this is equal parts of Shellac 17 1/2 lbs
x Oil Camphor 5 lbs per lb

626 "The Necron Why"

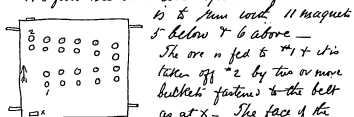
Dec 13 1889

1 After moving into our home we found that all our champagne was bad owing to the bottles having stood some time right side up - The liquid is permeated with Carbonic acid gas and is under considerable pressure, the bottles standing up the space between the liquid & the cork was filled with gas which when the cork got dry passed right through it until there was no further pressure. Always lay on side to keep cork wet.

627 Ore Milling Machine

Dec 17 1889

170 lbs the best arrangement of 616



is to run with 11 magnets
5 below & 6 above -

The ore is fed to #1 & is taken off #2 by two or more bellows' fastens to the belt as at X. The face of the belt is shut in by two which is exhausted by a sucker and through which we feed at 1. The belt running 15 turns per min will deliver about 10 or 11 tons of Concentrate per day of 10 hours.

628 Accidental shock.Dec 18th 1889

While sitting one of our #4 transformers today Mr Kinnelly accidentally got the full force of about 1150 Volts from one of our Municipal machines. It knocked him down and the contact was broken - It burned him a little where the contact was made but other wise he felt very little effect afterwards.

629 Ore MillingDec 20th 1889

A test of machine as shown at 627 except that 4 buckets were used instead of 2 -

Time of run 10 1/2 minutes.

Speed of belt 365 feet per min. 74 buckets.

75.2% Ore - 42.8% Concentrate

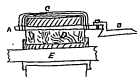
Concentrate 74 1/2% Tailings Barred 62 1/2%

Also took all the fine dust away -

Probably 12 tons per day of 10 hours.

630 ArmatureDec 26th 1889

Gramme Armature for heavy current & low volts. It is quite different & make a wire armature for 500 Amp & 20

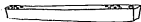


r. which will run true after being mounted on the wooden bodies.

This method is good & is shaft D is wooden hub on which are

placed bars of copper the same in number as the Gramme turns - These are secured down to wooden body

and turned off on top. The pressed iron wire ring
one is then slipped on — the top wire is preferably
made of wire in many strands as on to have an
inside copper to generate fireproof. — Bar A has
holes between the ends of the wire at both ends
and at the bottom end the wires are connected to the
heat bar to make a continuous bar. — A is also fasten-
ed to commutator. — It has also much greater
section than the other wires
on that part the dead wire



631 On Milling Set of Milling On Jan 3 1890
on machine 616 —

Quantity lost 2400 Oude 1694 Encont. per m.

To turn 50 " 70.03 " 6.45 tail.

Best 4.25 ft. per min

Quality lost

1690 Oude 1246 Encont. per hr.

To turn 50 " 71.3 " 3.98 tail, m.

Best 3.60 ft. per min —

Fixing our regular 20 mesh turn and running
it through three times makes it no better —

1 turn or 11 mag. " 67.33

2 " " 22 " 67.69

3 " 33 " 67.89

3 g. m. small drum 150 m. 67.33

150 head
Mag. mag.
Chm. Am.

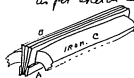
65.96

64.66

64.33

632. Armature

For the motor armature I make a bar armature
as per sketch — The underneath bar is solid and



a great deal larger in section than
B. It is also bent out the
width of one block as and



secured to the
armature wooden body. — The pressed iron wire core
C is then placed on the bar B consisting of three
bar bars insulated from each other except at the
ends are placed in position & soldered to A —
The brushes rest on B as as to use no commu-
lator

633. Steel Spiral Spring

Jan 3 1890

Made by Charles Thomas & Co. to our order.

15 turns of 3/8" steel wire with ends flattened —

1 1/2" in hole — 3/8" out diam — 2 1/2" space between

Coils — 9 1/2" long before compression —

8 1/2" " with 180° bend weight 9 lbs

1 1/2 " " 360° " " "

1 1/2 " " 480 " " "

6 1/2 " " 530 " " "

6 1/2 " " 590 " " "

5 1/2 " " 665 " " "

when released it went back to 9 1/2"

634 Artificial Sapphire Jan 9. 1890

Having difficulty in procuring sufficient
lightness for the Phos. work, thought we
could make some after the numerous formulae
given by Gaudin, St Clair Deville, & others, or
make some alloy of Chromium or Manganese,
or press up Wheat some oxide so that it
would have the requisite hardness.

*1 Deep Alumina pressed (mould)-

20 ton jack - & 5 min in A.C. -

scratches glass - not Paphyre -

white

2 Bromide Al. ditto - Scratch

glass but not Papyrus - white

3. Alumina, fine precipitate: 1" mould, 20 ton jack - Arc $\frac{1}{2}$ hour - Crystalline fracture - porous - scratches glass but not sapphire

4 Simplicia Acid $\frac{1}{2}$ bush. Charcoal $\frac{1}{2}$ mixed together and
a little olive oil & pressed in a mangle - 25 ton jack - under
are could get nothing but a loose friable mass that it
was impossible to do any thing with

"5" Fungite Acid $\frac{1}{3}$, Magnetite $\frac{1}{3}$ Charcoal $\frac{1}{3}$ pressed
1" mould - 20 ton press + fused in Arc 5 min - buttons of
alloy hard + color of steel when polished - takes a fine
polish - when hardened will almost scratch glass

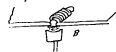
6	Smoky-bk. Owl	9	Magnificent	1	all treated same as #5 except the Ox. Hy. flame mottled of the iris. All too
7	"	4	"	1	
8	"	5	"	1	
9	"	3	"	1	



do not easily grind on emery wheel, but are not hard enough, or else we cannot get a good enough edge on it, to cut glass the 3-1st 9 was the most metallic of the trials. —

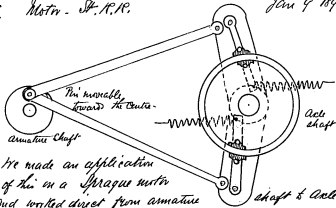
*10 Suph. at. $\frac{1}{2}$ Bal. Soda $\frac{1}{2}$ pressed 1" mould
+ in air 10 min - head small - rather hard -
glassy surface - inside flat crystals - dark
color -

We find that in the case the substances are as
mechanically boiled and as constantly under the
influence of the gases of the case that we have
described an arc in which the flame is thrown down
by a magnet as in B & a movable crucible
in order that we can raise &
lower it & get whatever heat we
want.



638 Motor. St. R.R.

Jan 9 1890



We made an application of this in a Sprague motor and took direct from armature shaft & axle getting a variation of 5+1 mile per hour

636. Hard Rubber

Jan. 11, 1890

The method at present used by a party in N.Y. for pressing hard rubber in moulds is to make a bag of the party main and put in a little water or other liquid, they then put in oven in type melted rubber & the heat causes steam & pressure to fill the bag out to the mould exactly. By this means many things can be made of rubber & very cheaply.

637. Artificial SaphireJan 13th 1890

*11 Oxide Al. & Ox Lead (muriatic) & kept at higher red in solution crucible for 2 hours gave yellow crystals. Sol. lead & the oxide Al is greyish clay like crystalline mass - grinds easily in emery wheel & does not scratch glass - put it in the Arc for 10 min. then cut glass - but easily scratched by Saphire -

*12 Al. Sulfate 5 - Oxide 4 - Al. Oxide 1 kept at lower red button in hydraulic press - 15 min. in arc round hard shiny button not porous - cut by for knife - not fine

*13. S. Ox Al. 4 - H₂O 2 fused 1 - made in Arc - small button very dense & shining not at all porous & looks at - scratches glass & difficult to scratch it with Saphire. Made knife of this & under the microscope the edge is slightly beveled, making a chip in 3 or 4 sections is now working to see if it will keep its edge - the new 150 cut in photograph & under microscope is as good as at first

638. Afterword Compound (Mordant)Jan 13th 1890

Afternoon came across a new method of forming the rings of the material - involves the mould in the latter very rapidly & heats it up - puts the powder in whilst it is in motion it flings forward the main & forms the ring - the inside is finished up by holding a cold burner against it just before chilling -

I have suggested this process to Dr. Schultzeberg for making duplicates instead of pressure & he is trying it.

639. Artificial Saphire

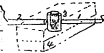
Jan 19 1890

*4 Boric Acid (fused) + metallic Aluminium

by weight - In the arc most of the Al was oxidized. The remained an incrustation - crystalline - steel white - brittle - and hard - cut glass nearly - hardened cut glass but too fragile - shall try different proportions -

Note on *12 - Had two Kinn made from *12 - looked like white glass enamel - in making they worked like Saphire but a little softer - good edge - took 150 cuts in photograph with one & under microscope it looked as good as at first

Note - Crucible for melting without getting the intense action of the arc: 1 & 2 are the arc carbons - 3 is a carbon crucible with sloppa of carbon - they are all cut into pieces of graphite is - this allows us to get an arc in each side of crucible which contains

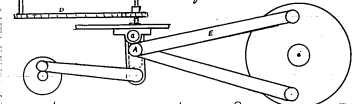


The substance to be melted & kept white
hot & in a quiescent state

640 Mechanical Motion

Jan 19 1890

Method of varying the travel of a crank pin and
while running - This is applicable to motion
for sheet ear 63° & wheel.



we have made & applied to a Magnus motor #6.
at Orange N.J. A is fastened to B & can be moved up
and down by chain D - When A is in position of C about
E has no movement.

641 Magnet

Jan 19 1890

Magnet of #616 wire 5' x 8 1/2" long wound with
wire & taking current of current. current turned
new wire are 5' x 17" long. 165° 1/2 x 9. head core
177 insulated wire. amp. current

642 Oil Photomicrograph

Jan 19 1890

We find that it is necessary to put a piece of
cotton flannel on the clean glass over the wax
cylinder so that the shrinkage will not crack them

We have made hard rubber shells and other compound
shells & dipped them in the wax but we find the percent
if bad due from cracks, blowholes, & broken edges in
too great to be practical

Jan 23 1890

643. Diagram of Wax for Br-Cl rings
A 66" Fall inside 2' x 29" diam
" 39" " 2' x 14" "
" 27" " 1' x 12" "



644 Compound for Blum tube

Jan 27 1890

As used today at Schenectady -
Sundrad Asphaltum C
Baked Lard Oil 1
Heated 250° - 280° Fall

645 Water Motor

Jan 27 1890

For Photomicrograph -		Lentil today	
Fall	Photomicrograph	Lens	Gells.
Aliphan	Aliphan		
10 1/2" D	125	5 min	194.
12 1/2"	80	3 "	1 "
20 1/2"	125	3 "	1 "
30 1/2"	125	3 1/4 "	1 "

666 Elam Monograph Work

1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
Nov 4	332	177	160	45733	88					
11	94	236	194	2044	89					
18	730	247	229	1165	11					
25	99	225	182	754	50	31.281	06			

Feb 1	128	260	164	47391	52					
8	156	237	452	186	76					
15	173	221	133	5424	40					
22	86	311	201	22	13					

Mar 1	44	200	122	11609	10					
8	71	116	195	1094	60					
15	89	129	87	356	93					
22										
29										

T. J. J.

Continuation of 582.

1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
Nov 4	332	177	160	45733	88					
11	94	236	194	2044	89					
18	730	247	229	1165	11					
25	99	225	182	754	50	31.281	06			

Feb 1	128	260	164	47391	52					
8	156	237	452	186	76					
15	173	221	133	5424	40					
22	86	311	201	22	13					

Mar 1	44	200	122	11609	10					
8	71	116	195	1094	60					
15	89	129	87	356	93					
22										
29										

644. Magnetic Nail -

Jan 30 1890.

1. Ward's discovery 1819 of rings on a paper which was pierced by a wire carrying an electric current. They are always shown as concentric rings, but do not travel with or against the direction of the current in the wire.

2. It is possible then that an electromagnet is made up as follows: - wire around each wire. The wires will be neutralized between adjacent connections and then will make a line of force up on outside and down on inside - None if a piece of iron is inserted it offers a path of very much less resistance and makes a magnet. The lines on the outside however are lost and there would seem to be equal in number to those on the inside. It would seem to be good to make a magnet as:-



iron inside the coil and also a ring outside.

645. Inventors' Nautis

Jan 30 1890

1. 50th wire Sub.
The last wire to be black after copying as well as before.
2. Cancelling Sub.
A good indelible cancelling ink is a thing wanted by the post office authorities.
3. That pumping machine
A machine is wanted that will do more than accept the

last back side & have it then - It must lift it up & take it away.

2. Umbrella.

A machine to convert umbrellas all in one piece same as a sticking.

3. Antine Black - There is as yet no decent antine black color - There are blacks which show through them a green, brown, or a blue color & others which are fringed when the light falls a certain way, but the real "black black" has not been invented yet.4. Surgical Bandage - A good appliance for holding the patella or knee cap when it is fractured would be appreciated by surgeons.5. Telephone signal - A device for letting a caller on tel. know that you are not in & that you will be at a certain time is desirable as it would save the Central's much time trying to get them.6. Horse shoe - It is claimed that the horse shoe of iron is a barbarian thing - There needs to be one that will save the hoof from undue wear and breakage at the same time permitting elasticity of movement when the weight of the body is on and off.

9

up a trust which we can continuously add to until it is thick enough to cut up into slabs. The effect of the centrifugal force is to make it dense and free from bubbles.

<u>1891 Monograph Notes.</u>	<u>Feb. 23 1890</u>
Jan 31 1891 Assets	
Cash in Bank	30 554.43
Real Estate, buildings & fixtures	123 231.22
Mach. and tools	205 619.80
Labor Materials	356 438.91
Gen. Expenses	92.353.39
Sundry Credits	792.01
A. G. Mon. C.	144 638.58
Refg. rights	156 000.00
	<u>1 109 622.34</u>
Liabilities	
Issued Capital	300 000.00
Acc. payable	44 354.89
Mortgage	10 000.00
Labor A/c.	426 456.15
	<u>1 109 622.34</u>

Stock named for purchase of Refg. rights & which is entitled to share in Co's assets on per agreement with U.S.S. May 12 1888 96 2/3% share \$96,720.00
 Com. 24 added for cash 1840 144,000.00
 Total entitled to share assets = 240,720.00

Real stock not entitled to share in Co's assets. And representing only a certain interest in dividends, so per agreement with U.S.S. May 12 1888 - 57 2/3% share \$9280.00
 then limitation. Total \$300,000.00

On 17 Feb. 1891 Board ratified an increase of Capital to \$400,000—

Photograph Sale List

Feb 28 1890

		Labels	Materials	Sales
1001	Frame per 1000	1	160 40	171 44
1002	Cylinder "	1	15 30	8 25
1003	Cyl. Clp. Lpg.	3	90	56
1004	" " pin	3	1 12	1 12
1005	" Diff. Spring	1	4 00	2 25
1006	" Barrel	1	20 50	27 17
1007	" Shaft	1	42 50	53 1
1008	" " Cutie	1	90	13
1009	" " New	1	1 40	46
1010	" " Bearing	1	40	1 45
1011	" " pin	1	1 12	1 12
1012	" " screw	1	1 58	1 58
1013	" " Pulley	1	4 55	13 38
1014	" " Carrier	1	1 00	73
1015	Shaft S. Hauler	1	20	20
1016	Cyl. Diff. Hauler	1	15 50	4 45
1017	" " pin	1	1 00	23
1018	Ship	1	16 77	5 40
1019	" pin	1	1 00	92
1020	" " framing	1	65	125
1021	" " screw	1	1 58	1 58
1022	" Spring	1	2 00	33
1023	" Hight life	1	1 00	21
1024	Fixed End	1	3 70	2 27
1025	" " spring	1	1 30	50
1026	Bot. Hgt. Diff. pulley	1	2 00	1 95
1027	" Wheel	1	3 00	32 32
1028	" " Diff	1	16 60	20 4
				446 27

		Labels	Materials	Sales
1029	Brought forward			446 27
1030	Bot. Hgt. Diff. Hauler	1	1 10	1 25
1031	" " " screw	1	1 58	1 58
1032	" " " pin	1	1 10	3 20
1033	" " " pin	1	1 10	14 14
1034	" " " pin	1	1 10	41
1035	" " " pin	1	1 10	86
1036	" " " pin	1	1 10	75 00
1037	" " " pin	1	1 10	6 00
1038	" " " pin	1	1 10	3 52
1039	" " " pin	1	1 10	9 27
1040	" " " pin	1	1 10	2 15
1041	" " " pin	1	1 10	2 15
1042	" " " pin	1	1 10	75
1043	" " " pin	1	1 10	3 16
1044	" " " pin	1	1 10	2 66
1045	" " " pin	1	1 10	4 93
1046	" " " pin	1	1 10	22 10
1047	" " " pin	1	1 10	26
1048	" " " pin	1	1 10	1 52
1049	" " " pin	1	1 10	32
1050	" " " pin	1	1 10	20 20
1051	" " " pin	1	1 10	3 72
1052	" " " pin	1	1 10	32
1053	" " " pin	1	1 10	14 70
1054	" " " pin	1	1 10	4 00
1055	" " " pin	1	1 10	25 30
1056	" " " pin	1	1 10	15 12
1057	" " " pin	1	1 10	21 37
1058	" " " pin	1	1 10	6 75
1059	" " " pin	1	1 10	9 18
1060	" " " pin	1	1 10	1 05
1061	" " " pin	1	1 10	2 00
1062	" " " pin	1	1 10	879 27

			Label	Makes	Total
1050	R. Leg Locks	1	2.90		2.90
1054	L. " "	1	2.95		2.95
1055	Body Sorens			1.07	1.07
1059	" " " " " " " "		1.70	35	2.05
1060	Head Hooks	2	1.40	1.08	2.48
1061	Leg "	2	.60	1.00	2.10
1062	Upper Stud		4.00	54	4.54
1063	But Sorens	2		3.16	3.16
1064	Lower Stud	1	4.50	52	5.02
1065	Thrombogram	1	35.00	21.08	56.08
1066	Arm Hooks	2	1.30	74	2.04
1067	R. H. Kft. Centre		3.30	15	3.45
					96.67

At this date we have shipped about
425 dolls to N.Y. & have about 400 more
ready.

We have made the price \$1500 per 1000
movement complete in bodies
\$30 - per 1000 for assembling the
heads arms & legs & washing & chemical

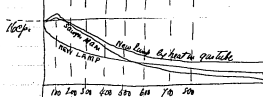
labor & Mat.	\$ 968.34
3% for loss.	<u>48.42</u>
	1016.76
40% Gen Exp.	<u>406.68</u>
	1423.44
20% profit	<u>284.74</u>
	\$ 1708.18

656 Lamp Manufacture. Secret process. Mch 1st 1890
Over a month ago Edison told me to build a place
to carry on the following secret process: The building
is up & Brown from the laboratory is in it now
& getting ready for work. Edison says:-

Experiment have shown, that by depositing carbon on the filament of new lamp by the method of heating a lot of filament placed in a carbon box which is again placed in a wrought iron gun tube closed at one end by welding & the other by a screw cap with very

placing the wire in a stove
and putting in a material
which is decomposed by heat
and which contains carbon
that the carbon will be
deposited within the pores
of the filament which is not

the case if they are flanked in the usual manner and that they give a metallic ring when like glass. I have had 1 set of new lamp filaments treated in this way after I got them from France and while the life was no better or worse the candle power kept up this: - The present new lamp



662¹ Small left for England Jan 19 1890
Returned Mel. 14 1890

663¹ A. Olson left for Charlotte N.C.
Feb. 1890
Returned Mel. 11 1890

664¹ Mrs. Nathman Mel. 24 1890
Died at Villard's & met Nathman —
Present Nathman, Olson, Carl Schurz —
Lowery, Gauraud, Hersel, Solomon
Mae — Small, Olson, Sprague —
Herrick — Mayr Catm —

665¹ Mrs. Gold Toy
*36 When the tracking is too deep the recording
knife turns a hump up on the track that is cut —
then the reproducer ball comes on it presses
his down & makes a scratchy one which is
always so — This has been the cause of much
of our scratchy work.

666¹ Silver Lake Mel. 26 1890

Patrol out today the Ship # 3
the Prindley and the Power station & then
Olson then position before I go away.

667

Alphabet Sentence Mel. 29 1890
As the letter of the alphabet in one sentence
1. Mr. Brady gave me a black walnut box of
quite small size 27 letters (Shelton)
2. Pack my box with five dozen liquor jugs
32 letters (Shelton)

668

Olson Phonograph Works stock Mel. 30 1890
Received today from Olson 193 ¹⁰⁰/₁₀₀ shares
being my 10% of 947 ¹⁰⁰/₁₀₀ shares of stock &
extra of increase when capital was made
\$600,000 — This stock is regular & I am
entitled to 10% of 1185% shares that only
participate in dividends which has been given
to Olson

EDISON'S AIDS

The Great Inventor's Right Hand Men.

WHAT THEY HAVE ACCOMPLISHED IN THEIR SEVERAL FIELDS.

A Succession of Triumphs in the Material
World. Aug 5

[illegible][illegible]

and Col. Thomas A. Scott.

Sigismund Berczmann, when he came from Germany, could not speak a word of English, but he somehow managed to get acquainted with William Edison. "His work spoke for him, and he was a trained mechanic," he told me. "When Edison's Newark shop was after Mr. Berczmann accepted a similar position. In 1878 he opened a shop in a small front room at 101 West 27th street, his family occupying the rear portion. Here he proceeded to manufacture and repair all manner of electrical apparatus, and similar to the work of his former employer. He had two small sons, his four-year-old son and two boys. When the phonograph and gramophone were invented, and Johnson was casting about for some one to make the instruments, Edison recommended Mr. Berczmann. This led to a

It is

[illegible]

plant is now estimated to be worth \$600,000,000.

One of the most remarkable men of the present time is John Krug, Sr., contribution to current scientific literature would be just or complete that omitted honorable mention of Mr. Krug. He is a native of Switzerland. He is a partner in the firm of Krug, Krug & Co., of New York, and manager and ranking next to Mr. Baileche. When Edison and his assistants have pushed over a problem until their heads are splitting, Krug is called in and he solves the problem in 50 seconds out from insufficient data. Whether his new invention is likely to prove anything more than a mere toy, the invariable refuge of the inventor, is another matter. He is a man of deep unerring... His modesty is excessive, and it would cause him pain to know that his name was going to appear in print. In every respect he is a genuine and lovable man.

Francis R. Upton, John W. Lieb, Phil Seibel and Francis Jehl, are among the other most prominent lieutenants of Edison, each his department deserving notice; gentlemen whose genius and merit have conducted to the success of the work they have in hand.

Low Grade Iron Ores.
Best of iron ores taken from
lands, in Putnam Co. N.
Myself :-

solution of Clay. The process is very cheap and surprisingly simple. Pure Kaolin contains 53% of Al. From the clay I am using I can get 16% metal - The process is entirely different from any mentioned before -

Nov Ore. Nov 8 1890.
Low grade. East of Milled ore of
Lilly Foster mine from samples
taken by me there.

Concentrate:

	ore	Am. Methan.
Mag. 100.0%	.7359	.5299
New Mag. 37.6%	.2691	
Slilings +		
Mag. 37.7%	.1656	.1213.
New Mag. 112.5%	.8314	
List of Samples taken by me of Jelling ore from the Road of Dean Mine. U. S. Nov 10 1890		
Magnetite.	40.0 Melsch.	
Mag. 294 g.	.977%	.703% Methan.
New Mag. Y =	.022%	Iron

Nov. 26 1890
The Reading Coal and Iron Co.
as taken by Edison &

- *1 10" from hanging wall near Holachi's house. rotation 4.36%
 *2 281" foot wall " " 4.72%
 *3 Around corner near KK & regular road " " 2.89%
 *4 5" from foot wall. dip 100° " " 1.42%
 *5 Shaft #1 10' out 25° from vein " " 10.09
 *6 " " " 20° " " 9.05%
 *7 " " " 15° " " 18.10%
 *8 " " " 10° " " 8.5%
 *9 " " " 7° " " 2.89%
 *10 15' from hanging wall beyond 2° shaft 9.01%
 *11 Near top of ridge where big mass just out of hill
 very perpendicular 11.58%
 *12 75' NW vein - top hill - perhaps 100 ft. 7.42%
 *13 500' from vein NW side 1.05%
 *14 Edge of hill 30' from small hole 19.72%
 hole #13 is on the hanging wall side & #14 is on foot wall side - #14 is on edge of a precipice about 250' high & about 500' long the vein running parallel to it about 30' back.

Magnetism.



Jan 9 1891
 Took the magnet from a 1000 var China dynamo
 and mounted it with suitable pole pieces
 as per sketch -

Shells: A small piece of shells hung on a silk fibre
 tends to turn its longest axis in the direction of the line
 of force when placed between the poles at x. If it made
 in shape of a needle it will turn in direction of
 line of force quick. It is not however attracted

by the magnet.

Cork: - Small piece of cork oak similar but weaker,
 no attraction.

Sophus: - Oak similar & quite strong. No attraction.
 Piece of wood match: - tends to set similar but only
 about as strongly as cork. no attraction.

Glass sphere: - No movement at all. Of course this should
 not be as there is no long and short axis.
 I set this sphere spinning rapidly and
 then charged the magnet but there
 was no apparent effect.

NOES

Glass tube: - This acted weak but in the opposite direction.
 Instead of tending to set lengthwise with the
 lines of force it set across them. This shows
 that glass is a poorer conductor for lines of force than
 air. I thought at first this was a repulsive force
 but on investigation the magnet neither repels nor
 attracts it.

Nights: -

Jan 12. 1891.

Weyl: May 1890 162 - 10% = 151% ll.

" Jan 1891 167 - 9 1/2 = 158 "

Emma: May 1890. 115 - 12% = 100 3/4 %

Rosa: " " 120 - 6% = 113 1/2 %

Alaska Ore: -

Jan 12 1891

Samples from Mr. Kuey, Angoon Island, Alaska.

*1 A hard white rock speckled with iron pyrite
 Effluviated. Anal. - Weyl's, Nov 0.153 to 0.200 %

Opden Mine N.Y. (Opden Feb 1899) March 9, 1899
 Edison estimate of producing 1 ton of 66% concentrate in
 the bin from 25% ore + losing 2% in the tailings
 Shifting # 0.07
 Mining at 38¢ 3 1/2 ton 1.05
 Conveying 05
 Crushing + 14 mesh separator 39
 Recrushing 1 1/2 tons 18
 Mine Royalty 25
 Ore Milling Co. 25
 Loading 05
 Brokerage 12
 General Expense 25
2.66

Lo be sold at 8¢ per unit - At bin price \$5.28

Iron Concentrate: (Opden Feb 1899) March 9, 1899
Washing
 Ordinary Concentrate from 100 mesh of Opden Mine ore
 Tinned "1" accepted 2,100 gms.
 After washing " 1,550 "
 Loss 3,250

About 15%, but resulting concentrate so much blacker
 that it would sell for higher price

I find a very heavy concentrate got from 263 & 278 on
 4 tinned contents. Opden Mine, the 20 feet is full of the fi-
 nest kind of iron but as today that after separation through
 100 mesh I got the following difference with careful
 washing: - Before 10968 mg. about 25% %
 After 7824 mg.
3/21

Magnetite Iron Ore tests (Opden 1899) March 22, 1899
 Carbon loss and tinned "Opden Mine"
 Taking percentages every 18 feet (from specimens every foot) from
 77 & 297 feet, a total of 180 ft wide would average about
 of magnetic iron 100 mesh.

No. of workers		100 men.			
For Sample	For Sample	For Sample	For Sample		
77 to 87	10 19.33	137 to 147	10 20.25	177 to 207	10 15.41
87	10 17.57	157	10 20.30	217	10 24.59
107	10 18.72	167	10 12.86	227	10 30.83
117	10 9.75	177	10 35.52	237	10 7.32
127	10 10.43	187	10 7.24	247	10 8.90
137	10 12.35	197	10 7.02	257	10 10.50

This would average 16.66% magnetic iron.

The ground up to 77 & after 297 up to 293 would be less
 than 10% on an average.

Again: -

77 ft 111 feet = 34 feet wide average 16%
 111 ft 130 " = 19 " " 9.46%
 130 ft 178 " = 48 " " 20.5%
 178 ft 204 " = 25 " " 26.62%

Now if we base the second & fourth of these as two "horizons"
 as they are cut, we have then: -

34 feet 16% = 544.94
 48 " 25% = 1201.80
 25 " 26.62% = 665.50
107 107 / 2412.29
22.64% avg

Westcott Street Building Plant
 Has up \$225 this morning. Large Gas crusher.
 July 9th up at Bank Mine.

July 11 1891.
 Jerry & Harrington's New City

New York East Mine.

As Shareholders of

this Co on May 8

were as follows:-

Edison 57%

Batchelor 20

R. C. Bailey 10

Small 10

W. H. New 4

S. A. Bates 3

The Empire City Electric company, now in course of liquidation, has liabilities amounting to about \$100,000. The company has lately been losing several thousand dollars a month, and O. E. Madden, the chief owner and financial backer of the company, at last decided to let it go into liquidation. The stock is now being sold by the receiver, Charles R. Dearbody, and the creditors expect to receive a large percentage of the amounts owing them.

Chicago Electric Light

W. L. H.

EDISON GETS AN INJUNCTION.

An injunction was granted by Judge Wallace in the United States District Court yesterday restraining the latter from manufacturing the incandescent lamp, which was recently decided to be an infringement upon the Edison patent. The final judgment of the suit will come before the Supreme Court on the 10th of the month.

Edison Electric Lighting Company continues and has been ordered to prepare, within the amount of which will be decided upon later.

General R. C. Bailey, of the United States District Court, yesterday granted an injunction against the Edison Electric Lighting Company, which was recently decided to be an infringement upon the Edison patent. The final judgment of the suit will come before the Supreme Court on the 10th of the month.

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W. L. H.

Oriskany - Sant Mine Ore 196 Fl.

Madison " " " " 0.02 Fl.

Madison " " " " 0.01 Fl.

Madison " " " " 0.01 Fl.

Madison " " " " 0.01 Fl.

Madison " " " " 0.01 Fl.

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Madison " " " " 0.01 Fl.

Madison " " " " 0.01 Fl.

INCANDESCENT LAMPS.

Judge Wallace Decides an Important

Case Yesterday.

Practical Monopoly Confirmed

Upon the Edison Electric Light

Company.

New York, July 10.—Judge Wallace of the U. S. District Court today handed down a decision in the case of the Edison Electric Light Co. vs. the U. S. Electric Light Co. The plaintiff claimed the defendant was infringing on its patent. The judge found in favor of the plaintiff, confirming its monopoly.

The judge found that the Edison Electric Light Company's patent was valid and that the defendant's lamps were an infringement. The decision was a significant victory for Edison's company.

The decision was a significant victory for Edison's company, confirming its practical monopoly on incandescent lamps in the United States.

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July 15 1891
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Sep 1 Newport to Astoria. Stopped at Summit.

Sep 2. Astoria to H. Conway & on the 3^d we had 4 horses taken to the Glen House - the 4th & Summit of Mt Washington & slept all night there & got up over the summit - On the 5th Mr. Hoffman & I walked down to the Crawford House whilst the other ladies of the party went by rail. We arrived thoroughly drenched.

Sep 6. We went from Crawford House to the Thayer House & from there on to N.Y.

On the 6th our journey up the Mt Washington from Glen House to Summit was made by Ross & I in a buckboard with a driver. Distance about 8 1/2 miles. ^{Rate of 4.66¢ per foot} 54¢ per mile. Started 3. 26. 20 p.m.

arrived 6. 16. 20 " 2nd 10 min.

The stage took 4 hours. In the note book of the Glen House there is a record of Dr Seward M.D. having done it in 1 1/2 hrs. 47 sec. behind 6 prancing black horses - I notice also in note book that C. B. Secker of N. Y. & Q. H. Dakin of Astoria came down from Summit to Glen House 10 feet with packs, in heavy rain in 1 1/2 hrs.

Sep 10 & 11 Expent at Summit Mine -

I saw Edison at R.R. station today & told Sept 12 1891
him I was going abroad
Head of the black - On Sept 8 the S.S. City of New York succeeded in landing the Japanese mail in Queenstown inside

T. +

of 20 days from Yokohama.

S.S. City of New York 4700 m. Sep. 19. 24. 0

Can. Nov. 7 1/2 C.H.H.K.K. 2850 m.

S.S. City of New York 2800 m

at about 10000 m. in 20 days. 500 m. per day -

Lead Phosphorus in Lead Concentrate - In the early part of Oct June when Edison was at the Summit mine with me, he prepared for the reduction of Pb in our concentrate. This we wash with about 1 1/2 % Sulf. Ac. in water for 30 hours. He then he explained as follows - The Pb is always in the shape of phosphate of lime - The Sulf. Ac. attacks this & carries the Pb as a sulphophosphate, soluble in water. The phosphate of lime is a milky solution that takes a long while to settle so it is all washed away.

Sulfur & Barite Mines - The history of Putnam Co. 1807. By Wm J. Blake put by Baker and Leister. Oct. 1891 - page 28 - "At one of the excavations for mag. ore 8 ft m from bed of Spring in Stillpoint - on the road to Barren 7 1/2 mile or more NE from the principal of the Stillpoint mines on the same vein 5 or 600 tons have been blasted out from the vein. Above the mag. ore. is so much intermixed with pyrites that it cannot be used to make iron. In some places on the vein the pyrites seems to have been a paste in which the grains of mag. ore. have been disseminated, but it generally only forms to 1/4 of the mass. By exposure to the weather efflorescences is formed which efflorescences in dry weather it is washed away by rain until the pyrites is decomposed and the mag. ore. left.

The great wag. he. been called the Smiley runs NET S.S.W.

Coast.

Sept 22 1897

Noon 3.7 the girls left Hoboken on the Stie of the North German Lloyd line for Bremen. — KOTW Joffin wand a -
dium from the dock. — Immediately after we get under
way we pass and salute the Alta of the same line coming in -
Passed Sandy Hook 10.50 a.m. and at pilot off at 11.9 a.m. —
At 8.0 p.m. met the Thistland of the Red Star line bound in
to U.S. — Capt Willebrand and the officers generally a



steady looking lot and seem to know
their business. — Girls already under
the influence of mal de mer but not
sufficiently to stop them from enjoying
the fine weather. Noon came down
bravely to dinner but before the second
course she found she had forgotten to have
something on deck and returned. —

Sept 23. — Beautiful morning — sea deep blue — not
quite as much motion — girls on deck early but fishing
still the motion of the vessel — Run 422 miles —

Sept 24. — Fine weather — hard winds — skipping a good
deal of water — klama and girls about same, no worse,
although it's rougher — Run 418 miles — passed a
bank very close — boat steadier —

Sept 25. — I think we must be in the 'banks' for I looked
out of the port-hole at 5 a.m. and saw a lovely delusion
with no sails at all sailing around horribly — the heavy

Text

well makes our clearest path and sell — girls still
under the weather, klama especially. — She says very
emphatically it's her last journey, then in a low tone in
this direction — 416 miles —

Sept 26. — Fine day — wind southerly and warm — heavy sea
yet — All evidently better — all on deck at 8.30 a.m. I
notice on the deck that we take a very westerly course —
445 m —

Sept 27. — Very cheery — barometer going down — strong
east wind — quite warm but throwing a good deal of
water — 487 miles — klama worse and girls also —
One grand boat went topsailing on the deck with
about 40 chairs, he live in clothes badly — very bad
night for the girls —

Sept 28. — Weather moderated but nothing badly —
klama very rest during the night — Rainy and misty,
suggestive of the English Coast — 429 miles —

Sept 29. — Passed Lizard 7.18 a.m. & 4.4 time 2.15 a.m. —
Sandy Hook to Lizard 169 m. 22 min. wrote,
passed and saw Cedeytone Lighthouse although quite
a distance off — nice calm morning — all well now
and over excitement — no seem to have lots of company
all along the coast — all kinds of craft going both ways —
he noticed Falmouth Bay and Portland Bill — the
great rocks of granite and colored sandstone at the
western end of the Isle of Wight having a bare face on them
about 800 ft high are very imposing and entirely over-
shadowed by the bare rocks called the 'Needles' at the
entrance to the sound between the Island and the

mainland - Saw at Southampton 16th Jan from Sandy Hook 3000 boats - We did good bye to each of the boat-boys that we had become acquainted with that left the boat here - On turning to go out of the port we passed Cooes and got an excellent view of Cobscook Point the Davis Island Residence. In going to see the forts by the circular forts in midwater - there are 14 of these harbor protectors

Sept 30 Anchored about 5 p.m. near Bremerhaven and after considerable labor & waiting at the Customs houses were shipped forward to Bremen arriving 10-30 p.m.

Stopped at Altman's - Mr. Stubbins and family were very kind and gave us quite some help Oct 1st Bremen. To east of arms a key

The Cathedral 11th & 13th Cent.

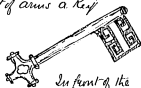
Roscoe pulpit given by Queen

Christina of Sweden 1688 -

First coat in bronze in 11th Cent.

In front of the organ are some reliefs dating from 10th Cent. very well preserved - The Rathaus - built 1405-10, facade on S.W. side in 1609-12 - Upholster a picture by Wilhelm 1870 Battle of Langens - Some specimens of old carving on doors and stairs

At the Keller's - Lunched here and drank some of the old wines - visited the cellars - I noticed some of the wines 1 or 200 years old were always being put away in bad bottles - I notice also that the difference between a 3 & 6 mark wine is very respectable but the difference between a 6 and a 15 mark wine we could



secretly distinguish - The market place - The Kaiser's house, a very handsome bridge from which we viewed the river traffic - the cattle boats with their blunt noses and side wings - also the carts drawn by dogs.

Oct 31 - Bremen to Hanover - miles by rail -

Royal Hotel, lighted by incandescent lamps, small burial station also by - I notice all the cities here have large fine Railroad stations and the roads come into the centre of the town on fine substantial brick viaducts; many of these are utilized for business purposes - Rose permanent ways are made quite ornamental when they run through the better parts of the city - The Oct & St. building is also very fine - Saw three all belonging to and run by the Govt. are frequently combined in one large building - In Hanover - the Kaiser's house



10th Cent. - Old

Stad - the

Academy of Sciences

the High School

formerly a

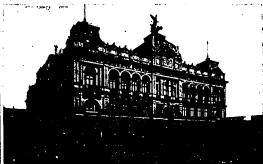
Palace - the

Palace of the Empire

with the Guelphs

Palace - the

Palace House - the Stadthaus - the Museum - the Palace of the Duke of Brunswick - Museum - and City buildings - all are worth seeing - the electric cars - the opera house is very fine - We undertook here to listen to German Opera - purchased tickets for Sanhausen, but found it as disappointing



that it is not
clear that we
shall try it a-
gain

Oct 5:-
Hamburg to
Frankfort,
express 85

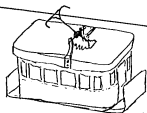
miles an hour - This is as fast as you can travel in Ger-
many - Country entirely agricultural, every thing grand
being cultivated like a kitchen garden - passed through
Gittingen where we noticed the University buildings and saw
a number of the students at the depot - saw that a number
had their left cheeks badly slashed.

Frankfort - Railroad depot largest in the world - front 220



meters - 3
Spans 56
meters high
and 22 1/2 m.
wide - 209
trains daily
finished Aug
1877 -

Station lighted by 24,000 incandescent lamps - View
on the river Main very fine - Bridges - St. Bon -
the Carlen haus - Port - Börse - Pauls Kirche and Mik-
el-Kirche - Kaiserstrasse - Goethe haus - the Römer
and Römeraal - Fine Zoological Gardens -
Frankfort has two electric railways both running to



showing entanglement from a
short distance from center
of town - One uses the
double trolley system of
Siemens, similar to the one at
Paris in 1871 - The other also

put up by Siemens but is a single

overhead wire system - The arrangement of making contact
is not by trolley wheel, but by a piece of copper wire resting
against the main wire shield against it by a spring -
It works well and seems good and cheap, requiring no
attention; it does not spark and splutter, which you nat-
urally expect it to do - It is so wide that they have no
trouble at shunts & crossings - All the tests which are
on both sides of the street are iron and ornamental -
Exhibition of Electricity - Noted Siemens, Schuckert
and other types of dynamos - saw the transmission of
force going on between Cuxhaven & Frankfurt etc etc -

Oct 8:- Frankfurt to Nürnberg - 157 m. express 5 1/2 hr -
at 25 m per hour - Country very picturesque - every few
miles a little village consisting of old gabled, red tiled
roof houses, and a church spire rising from the middle
- Country as usual cultivated like a garden -
considerable forest (as they call it) but in which I see
no timber; all being allowed to grow to small wood
& probably cut and sold -

Nürnberg: - Dom - Museum quite good with
many examples of old wood carving - St. Sebaldus
Church - Diner house - Kraft's Souvenir -

many and good — Small bronze monuments, such as the little stone man, in Markt Place and others, all dating back to 1500, wonderfully dense — Ancient old houses with rich interiors — Towers and walls — Follies — Deep well cut out of the solid rock 350 feet deep and made long before any powder in use — Subterranean passages to it — Kilmberg is a most important manufacturing town — Its electric roads or electric light stations — In the Café of the Hotel Strauss they had an installation of incandescent lamps, all red lamps — not used whilst we there —

Oct 11: — Kilmberg to Dresden.

Scenery quite picturesque — passed through Culmbach famous for its beer — As we cross the border of Saxony we notice that everything looks more prosperous than in Bavaria; the villages changing from old fashioned and generally poor looking (not tiled, high roof buildings) to neat white cottages with slate roofs and built up in better order —

On the railroad we noticed the service better; the men better dressed and the locomotive they attached to the train was the finest I have seen in Germany — We noticed ten very fine biplanes on this route one at Bautzen, Elberfeld and the other at Gotha, each 728 yds long. As usual the journey (express) was done at 25 1/2 m per hour —

Oct 15 1891: — Dresden —

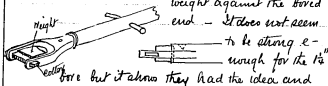
We have been here 4 days — No risk with a helms attack, 24 boats attending her — Have engaged a suite of rooms at the Bürgerbräuer Hof, Parker 2

bedrooms + bath room 12 m per day — Have visited all the best schools, + have decided to commence at Frankfurt Oct 19th — The Bürgerbräuer Hof only opened Jan 1891 + its best hotel here, elevator electric lights etc etc

The Elbe here is a very important river; it seems to have a large carrying trade — steamers come up with long tow of heavy long flat bottomed boats by means of a chain laid in the bed of the river, and the loaded boats go down by stream — On the dock I saw boats being loaded from cars that had apparently come from Austria and I judge that Dresden is an important station for exporting from west of Austria, the barge taking goods down to Hamburg where shipment is made in ocean bottoms — His looks more reasonable than shipping by docks especially if they can ship through Germany in bond —

The collection of paintings in the Dresden museum is very fine — Raphael, Madonna — Guido Reni — I was surprised to find what very fine work was done by Holbein — I always thought he was a painter of Dutch family like Rubens — Some of the modern paintings were very fine — Norwegian scenery — Bears on a cliff watching a caravan — Luther and St. Cyric — Degeger — etc — Museum Johanneum — Very fine collection

4 Amos - about 30 mounted horse figures - in full armor, most of them unstable & finely worked - very large collection of flint & lead pistols and guns of 16th & 17th Cent. - great variety of swords, one of 1243 - one of Luther's - variety of hunting swords some with scabbards provided with a dinner set & gifts for roasting - I saw a broad loading cannon dated 1576 about 6' long and 14" bore the breech was like this: - a girl held a



attached it -

I got letters here from New York dated Sept 20th 4th from which I gather

1st The contracts with Jones Livingston & Schomacher in regard to buying the Croft mine N.Y. and leasing the Croft mine were closed on Sept 30th.

2^d The N.Y. Coal & Iron Co. gave us prices for cutting wood on the property the following: -

Railroad ties	125 each
Subgraph poles	75 [¢] each
Fence pick	7 [¢] each
End Wood	11 per cord

3^d The mill at Ogden has not started up yet on Oct 4th but expected to on the 15th. Mr. Perry the treasurer made the last call on the \$10,000 increase

payable on the 15th inst

4th Letters from Frank B. from Bank Mine say: they have made a clearing from prepared with lime to end of Warden's fields and measured for a dam to get about 3000 on out ft. of water & pressure to top of Middle or about 25' above will site - They have tested smallley frequently & find it as good for our purpose

Oct 11th - Went to Reelin - Met Mr. Seibel and Uffertown & dined with them - Had dinner - new with Katherine at his house and saw one of the Central Stations with 3 large 1500 H.P. light, explosion engines in it - very clean, neat, & good installation - most of the apparatus was made by Siemens & Halske

Oct 19. Visited Bergman & Co. and went around with Seibel - Firm composed of Bergman, Knut, and Seibel - they make interior & exterior apparatus for houses wiring & have 6 mechanics running on different signs - they intend making all kinds of apparatus for installation work.

Returned to Broaden direct road - saw women in the fields doing all kinds of hard farming work - I see women & dogs harness together drawing big loads and there only want a man employment sitting on top smoking his pipe to complete the picture - Dr. Hirsch says he has seen that but accuses us so that he does not approve of it.

Oct 1891.

From Dresden telegraphed to Berlin Station-master asking if I could have a ticket on express from Berlin to Am leaving at 9:00 p.m. (it was then 100 m.) I would get on at Magdeburg & pay from Berlin (answer paid). I got no answer to it not to send after it & so of it had no - carried. Moral. Don't try to save sleepers.

Dresden to Klen. - All day at it arriving at 10 p.m. Oct 21. On arrival I found that I could get a sleeper at 11 p.m. for Paris - paid 14 marks (\$56) to be squeezed up into a compartment with three others and was turned out at the frontier & had to wait in the depot for 1 hour whilst the baggage was examined - It would be much better in future to trust to your rug & a seat in the ordinary carriage - Oct 22, 1891. - Paris at 11.00 a.m. - Dark night - Rained & ascended the Eiffel Tower, it is a wonderful structure - Instead when up only 100 metres the height seemed hundreds, but on going up 200 metres more this feeling did not increase.

Dined at M^r Oudin's tonight.

Oct 23. Paris to London via Cologne - rough voyage arriving London at 6 p.m. - Hugh Wolfe dined with me at the Charing Cross hotel & we spent a pleasant evening.

Oct 24. Left for Bournemouth - to spend Sunday with my sisters - Stopping with them were

Hugh Wolfe's two daughters, bright girls, & Miss S. Kidson - Sunday we took a drive around the 'Heads' & by Gladdoath Park.

Oct 26 1891. Left for Liverpool & took passage on steamer 'Cliff Farm' for New York, at night went to Manchester - Queen's Hotel -

Oct 27 1891. - Boston lunched with me - W^m Connolly & Ed called and Jim & Lou dined with me - W^m T^m Schofield called in the evening.

Oct 28. - Lou, Maria, John T^m Schofield, Harriet & the Kiffe girls, Harry & Loral Collins & Joe Anker saw me off at Liverpool - Voyage rather rough - fellow passengers W^m T^m Carnegie, Maria Van Gaudt, W^m Behrens of Manchester amongst them -

Nov 4 1891. Arrived in New York -

Nov 5 - Went to Ogden N. Y. & at mine all day with Edman - The directors of N. Y. & P. C. Works have bestowed a further increase of capital to \$100,000 which will be ratified at a meeting shortly - Bought 19 shares at par - I see no reason for any alarm as regards the plant W^m Schwartz has been discharged for incompetency - the many little difficulties to be overcome in straightening out things here were too much for him - W^m Connolly is now superintendent & Thomas is mechanical engineer - A very large amount of material

taken out by Odessa after the loose failure has been used for other things and although there is quite a good deal thrown away there is nothing like the amount we expected to lose.

W. Odessa figures now that mill #1 as regards the crushers and rolls has a capacity of 130 tons an hour. — How many hours per day can be run has not yet been determined. — The new Ridgewood Cuts is all O.K. and running 1 skip (9 low) every 5 minutes. — The old crusher from the Beechboro plant is in place with a #32 motor ready to deliver to the small crushers as a help to the big one. — They are putting up a track to dump ore from the Opden into the crusher bins. — The crusher bins have been arranged with heavy timbers, the inside lined with thick plate iron. — There are two (one for each cable), either one can be used. — All the rolls and magnets have been supplied with a new roller feed & they work first rate. — All places, where the ore is delivered to a belt are provided with boxes that do not allow of the ore coming down with a rush, but let it down gently at the speed (about) that the belt is running and a certain amount of dust. — All bearings have been provided with grease cups, and these work better than the dust proof bearings.

Every time the handle of the grease cup is turned a little of the grease squeezes out and forms a collar at each end of the bearing on the shaft which prevents the dust entering.

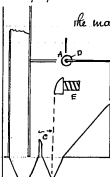
Barren pays 1 unit in the ore is 31 lb.

The 50 mesh screen are being cleaned with card cloth with rubber back instead of with leather back. The screening capacity of this mill is much too small, if it was sufficient the mill would run through 2500 ton in 20 hours.

Nov 6, 1891. Opden R. J. — We decided tonight to change all screens in #2 mill and make them better & more accurate. — Thomas made the design. — Each screen is composed of 11 wheels of spiders into the periphery of which were 81 in O bars, & in each bar the screen holders are clamped with 4" rubber for a cushion.

Nov 9, 1891. Opden. — Have made arrangements with the Morris Co Mach. & C. to cast the wheels & attach to the laboratory turn the bars for these screens, the Parsons & Blumhuth of Boston are selling the iron 5 1/4 % to 1 1/2 % — our lead by train to be delivered at Laboratory Wednesday. — Attempt to turn them all up here & send them to Opden.

Separation: — We have made a number of experiments to determine the best conditions for working.

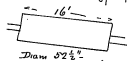


the magnet and then feeds, the result of which is:-
 Qm at A 1st 1 1/2" 2nd 1 1/2"
 " B " 1" " 1"
 distance C " 3 1/2" " 3 1/2"
 Rev of D " 4 " 4
 Rev of E " 20 " 20

One quite damp while working.

Nov. 13th Opden W.

Persons:- Rate of progression through screens



1 1/2" per foot incline -

Rev. 15 per minute -

Sufficient ore in screen to fill a

chord to 1/2" of the circle or about 2 1/2"

side - Surface speed 177 feet per min + ore was raised up inside of 4" of the circle or 20 1/2" from bottom. A piece of coal dropped in took 25 sec to come out. This was an average of 6 tests. Coverage of ore in mill #1

Circle 15.30

Concentrate 37.25

Sludges 4.08

Five roller crushing:-

As the rolls are now running we made the following test:- We took a bottle of ore, as it ran into the fine roll on each line + found out how much of it would go through 14 mesh + then again underneath the roll; #1 is the fine roll on the line furthest

away from the engine side; on top a bottle weighed 29 1/2 lb bottom 50 oz.

Sp went through 14m.

Bottom went through 4m

1 8 or 2 1/2 % 21 or 7 1/2 %

2 5 1/2 or 19 % 9 1/2 or 31 %

3 11 or 38 % 20 1/2 or 68 %

4 4 or 24 % 18 or 60 %

Of all the ore passed through the rolls crush to 14m

1 4.8 % 3 8 1/2 %

2 13 % 4 36 %

This has nothing to do with the 14 mesh that has already returned.

Nov 14. Opden W.

Reuben Crushers:- Capacity of 4 B. crushers No 1, 2, 3 + 4. No 1 being the first to receive the ore, got a greater percentage of fines -

The ore was caught in a box 5" of the width of the stream for 5 sec. + calculated to time per hour - As the stream spreads out we put box in different parts of it + took the average - The ore returned to crusher was taken in box for 10 sec + deducted - It was found that the 4 crushers averaged 26.25 tons each per hour

Crush Rolls:- Test for capacity - This sheet iron trough against rolls for 5 sec - ore in pile - through 3" of stream - fed roll given 1 1/2" + 15" per min.

#1 next boiler 8.4 3 4.6 very much fine

2 8.4 4 8 and damp.

Nov 15/1891. Sunday. Adams, J. & Connolly went prospecting at Hopedale. Connolly took samples all across the same vein as Ogden for about 250 feet & brought them back with us for test.

Nov 16/1891. Ogden M.J.

Ball crushing - Let to see the state of working of the screens, the $\frac{1}{2}$ " & the $\frac{1}{4}$ " rolls on #1 & #2 series - Portions of ore taken above the rolls & weighed & the percentage of what would pass 14, 10 & 5 mesh taken; again portions taken from under the rolls and the same particulars noted & compared - each sample was sifted on 14 mesh just

than 10 and 5	14	10	5	and
#1 Series Above 15%	30%	11%	12%	18.9
" " " bottom	40%	10%	17%	15%
" " $\frac{1}{2}$ " 15%			2%	14.6
" " " bottom	8%	3½%	6%	15%
" " $\frac{1}{4}$ " 15%	12½%	12½%	31%	16%
" " " bottom	58½%	19%	19%	16.4
#2 Series Above 6%	4.2%	8%	17%	15%
" " " bottom	44.6%	13%	16%	15½
" " $\frac{1}{2}$ " 14%			2%	14½
" " " bottom	14.4%	4%	13%	15%
" " $\frac{1}{4}$ " 15%	4%	12½%	36%	16½
" " " bottom	60%	20%	20%	15%

Final experiment of falling ore retarded by inclined boards as:-

Board 6 feet long.
A 12" long
B 3" space
8 boards



Makes of
16 boards
60" high
A 6"
B 1"
Angle 45°



At night made oils for French engine, to oil both sides of crank pin at same time -

14 mesh sieve: Wire .026" each hole is .067" □
of an inch the wire occupy .280" holes .720"

Screen plates:- Hole .096" $\frac{1}{16}$ " thick



A = .091"
B = .0945"
C = .234"

Hole .075" $\frac{1}{16}$ " thick

A = .280"

B = .066"

C = .144"

Holes per sq. foot = 9216.

Nov 19/1891. Ogden M.J. Designing best for feeding the dryer from 1½ Series with ½" mesh stuff from there & return belt for some after drying to distribute it to the four belts under rolls -
#1 will running today with 21.4%
Current = 41.35% & tailings 3.00%

Nov 1891.

Order: - Designing new dryer - Gasolines -
about 5' 3" square & 32" deep -
each supplied with 10 pieces of
19 plate each 190 in each section
each plate is 62" long 4" wide & 1/2"
thick so that the ore travels in 19 streams
each of which runs down 4" then drops 1 1/2"
on to another and so on for 90 falls.



There will be 9 of these on top of one another
with rollers fixed on top & the heat from
a furnace below to dry the ore as it falls.
Dry weight today 162 - 9 1/2 = 152 1/2.

Nov 20 1891. Order K.J. - Dismantling dryer sections -
H.C. took samples of ore from belt that runs under
14 mesh screens - These screens have a circular
hole .975" diam - There are 188 of 400 that have
holes .996" diam - All are set stopped up with the ore
that you cannot see through them and they have a
bar on that I think prevents them from working properly.
Of the total amount that he reports 70 1/2 gross
15.69% fine through 14 mesh 11.91% through 40 mesh
2.38 " " 90 " 10.41 " 30 mesh
1.95 " " 80 " 23.46 " 20 mesh
1.13 " " 70 " 12.49 " 14 mesh
1.14 " " 60 " 6.63 above that
5.03 " " 50 " No ore was first above
100 mesh & the rest 90 & the rest 80 & so on -
81 1/2 is finer than 14 mesh.

Nov 29 1891. Order K.J. - Our cost for a 10 hour run
seems to be about as follows:-

Mining 600 tons at 25¢	\$150.00
Wile #1 10 hours	44.00
Wile #2 " "	22.00
Steam & Electric Labor	42.00
Coal, Oil & Waste	45.00
Office exp. etc.	20.00
Royalties 20¢ on 360 tons	72.00
Ore Wile Royalty 25¢ 360 tons	90.00
	<u>\$465.00</u>

Dec 1 1891 Order K.J.

Machine in Ore: - Saw fine bright morning - Our
finished product takes perfectly in hand: 28.000
m.g. dried weight 19750. Machine 112.5%
Cost of ore. Agreed today with J.A.C. (Dec 5) on cost
of producing one ton of ore 67¢ ore with all expenses
and royalties at 300 - profit 147 per ton.

Dec 4 1891 Order K.J.

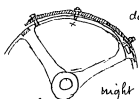
Cuban Ore: - The cost of Cuban ore del. at Havana
first appears to be, as near as we can figure:-

Mining, R.R. & Grading	\$2.25
Royalty, foreign	50
Freight to Sp. Pt.	2.00
Platts	10
Expenses of ore	107
Unloading etc	26
	<u>\$6.62</u>

is it is a 60% over it costs to them 9¢ per unit
 One ore at $\frac{1}{2}$ ¢ per unit + $\frac{1}{2}$ ¢ freight would be
 8.8¢ per unit
 Average at Bradbrook pays for Late Sep. ore 60%
 + uses 4000 tons per day @ 6.5¢ or 11.3¢ per unit.

Dec 12 1991 Opelec N.Y.

New Screens - We started the new screens in Mill #2 to-
 day but only ran a short time
 owing to screen bolts giving
 out



Dinner at Belvoir - to -
 night to Edison - Willard, Russell,
 Weiss, Lewis, Estlin, Bird, Klein, myself & many others
 there

Dec 14 1991 Opelec N.Y.

New Screens - Started these again but found we
 could not run them without some alterations - We
 decided to put a steel bolt in middle of sides of screen,
 to hold them better - I got steel bolts in New York as
 also steel studs for corner bolts

Dec 17 1991 Opelec N.Y. New Screens

We ran all day with 4 screens; with middle studs
 holding the screen frames & other studs not taken
 out - At the end of the day we had: -

1 bolt between 2 + 3 on #1
 " " " 3 + 4 " #1

A leak between 4 + 8 on #2
 " " " 8 + 9 " #2
 " " " 9 + 10 " #2
 " " " 10 + end " #2

#3 & #4 screens were all OK. The total leak was
 about $\frac{1}{2}$ of 1% at end of run we had lost corner
 bolts as follows: - 1 out 1" raw #1 screen, 1 out 2" raw
 #1 screen, 2 out 2" raw #2 screen, 2 out 10" raw #2 screen,
 1 out 1" raw #3 screen, 2 out 18" raw #3 screen, 1 out 2" raw
 #4 screen, 2 out 18" raw #4 screen, 1 Centre stud broke
 The output of these 4 screens was at the rate of
 264 $\frac{1}{2}$ per min or 6.81 tons per hour

I notice here that the bolts broken off are always
 at or near the end, never any in the middle & I think
 this is due to fog in middle of frame holder showing
 off heavier ends where we sag taken place -

The screening capacity is very small but we are tak-
 ing off the pit that runs crossways on the screen
 frame so that the ore will roll more and tomorrow
 night we put them in #1

Dec 18 1991 Opelec N.Y. Screens

Today #1 & #2 screens have been fixed up & the leaks
 taken out #3 & #4 left as they were as they had only
 lost 9 bolts each. Two bolts were also left out on #1 & #2 -
 Release: Average of 8 tests gave 190% per
 minute for the 4 screens (highest 220)
 Leakage for the day about $\frac{1}{2}$ of 1% ; on stopping we
 found that #1 had lost 4 bolts, #2 13 bolts, #3 5

both #4 & 5 H.E. We now set about changing #1 screen plates for those which had no rid across.

Dec 9th 1891 (Open 9th). Screens

#1 has new screens with no cross ribs, #2, 3 & 4 not changed. Capacity of 6 tests up to 11 a.m. show capacity as 236 lbs per min. This alteration if put on them all would double the capacity of yesterday. Leakage today was 1 1/2% up to 10.30 a.m. when a large leak occurred on #2 screen; this was immediately fixed.

First found it practicable to break out the cross rib of screen frame whilst in place and this will be done Sunday.

#2 Screen will also get on Sunday two studs in rim of wheel for each screen instead of one, & the end studs will be taken out.

Screen brushes are being made that conform to contour of circle when filed together. Also some are being made that are cut across to make them more flexible. Mallory is making some with weights on.

Dec 8th 1891 (Open 9th). At this date Mill #1 is about good for 1600 tons of ends ore & will deliver 1 ton stockhouse whenever we run at about that rate of grade.

Mill #1 still wants the dryer attachment.

Of the 480 new 906 slot screens it has only as yet got 108 of them. It has not yet got clutches

to enable the big crusher to be stopped without stopping the conveyors. It wants roller feed on the crushers. It wants new pulleys (18") put in place of the (38") to make French Engine run 165 Rev. We have as yet no roll lathe. The new exhaust pipe to French Engine (8") has been put in. The separator for steam pipe of Fr Engine has been put in.

Mill #2. Four screens are running but give as much trouble on account of sag that we are now fitting up the other 4 with trusses inside them. The screens do not seem to have the capacity although we have made alterations & put on weighted brushes. Only 2 1/2 tons per screen per hour has been got so far and we must have at least 4 tons. Otherwise mill works good & no little trouble.

And as we close the year.

Jan 1st 1892 (Open 9th). Started in to put the trusses in the 4 screens to keep them from sagging also is got out the dryer parts; it is necessary to have these two things to get an idea of how much capacity we shall have in the 8 screens.

Mill #2 working all day 12 1/2 hours.

Best machine 58 lbs 211 min.

Going to Stockhouse from 4 separators 3.63 tons per hour. 4 screens (no weight on brushes) 8.9 tons per hour. #5 Separator was receiving 1.87 tons per

186 Jan 19th.

have Avg. 69.87% tail 1.74%

Jan 2. Oyster N.Y. Mill #2

Concent. 69.1% tail 1.74% 1940 8 min -

Mag. hours 92hr 24 min

Stops were made for 'Screen', 'Screen', 'Screen', 'Engine' -

Very short of men, some off sick, & holiday season -

Jan 3. New York. Last Mine:-

Made arrangements with Worcester to cut 1000 tons from the P&A Coal & B. property - piece of labor to be 100th, 1st lot 30th, 2nd 30th & 3rd 100th

See to 'x' 6" x 6" -

Jan 4. Oyster N.Y. Dyer. Getting first dryer for mounted - can only use 18 hours as left by Freddy. Am afraid we shall have to use a blower as it is pretty well blocked up at the top - the steam coming down also will cause considerable down draft -

5th Mill #2. 19hr 14 min - Mag. hr. 86hr 55 min

Conc. 70.01% tail 1.57% Camp all day -

Stops:- 'Screen' - '8 hrs' 'Screen' - '6 hrs' 'Screen' -

2 Separators from 4 screens 6.06 tons per hour Material det. & Separator by 4 screens tested 4.5% finer than 100 mesh - 2 1/2% coarse -

187

Concent. det. & #2 Stockhouse 5 Separ. 3.91 tons per hour -

Test on Screen rejection:- all feeds 1" deep -

1. 66% finer than 50 mesh. 2. 66% finer than 50 mesh

3. 66% finer than 50 mesh. 4. 70% finer than 50 mesh

Dyer is progressing - Mason working on the fire -

place - Bread drilled 3 boxes - shall put up the bottom

are complete first - Dyer casting here for #2

screen - places being cut -

Jan 6th - Mill #2. - Today. Concent. 69.90%, tail 1.25%

1940 55 min. - Mag. hr. 69hr 6 min -

Stops:- 'Screen', 'Screen', 'Screen', 'Screen' -

16 feet Sep. 1000 fed through screens fed - first feed

2.12 tons per hr

4. 1st Sep. were sending 2.64 tons Concent. per hour

to Stockhouse - 3 Screens det. & Separator 643

tons per hour - 4 Screens 6.1 tons per hour -

Another test: 4 sep sent 3.94 tons per hour to Stockhouse

Weight of 1 cu ft of material det. & Separator (Waggon

37.52%) by 3 screens 131 1/2 lb. - two shaken & tested it.

Delta not shaken (Weighted 120.575) 119 1/2 lb.

Dyer progressing - Screens are running about

2.06 tons per hour - 2.12 tons per hour -

Got new pulleys 1/8" x 2 1/2" x 6 1/2" shafts to be driven

by French engine - Justice they look light

Section from 15 1/2" up inches

Weight of run about 20.09 lb.

Jan 7th - Mill #2. 18hr 15 min - Mag 39hr 47 min

at 2 1/2 tons per hr. + 2 1/2 tons at 1.35 tons per hour -

Concent 70.09% tail 1.40% - Stops 3, Screen -

In Exp. by 4 Screens 6-46 lbs per hour 4 ore damp.
 Run. 6 #2 Starkhouse from 5:50 5:54 1 min per hr.

Run 9. Ogden N.

#1 Mill

#2 Mill

38.54% Percent. 70.06%

3.12% Loss 2.41%

64/15 m Run 15 1/2 10 min

6" 15 m Mag. hr 82 1/2 3 m.

Grade 20.44%

Steps 1- 8 for screen - 1 flue on conveyor - 1 conveyor

Mill #1 Step - Main pulley in Eng. room

10 1/2 - Sunday - Thomas got down #5 Screen

shaft to put a piece on end to take order for end bearing - #6 screen frame has run 6 hr without showing any sag -

Jan 12. Stopped Mill #2 owing to continued trouble with screens shall not run again until the trussed screens are up.

Starkhouse #2 Sample tested by Booth, Gares & Allen showed today 64.07% iron - 0.2% Mn. This is very bad and we think it is due to the fine dust which does not separate by magnet and of course weighs in with cement. Kennedy would seem to be put in pans in Starkhouse, also not to have so much of a mesh finer than 50 in position, so that this settling over & over again & makes fines dry. 3 boxes wanted - 7 Hales here -

to screen has about 50 parts already on #4 & #5 screen are being put up.

High Magnesian ore 0.02% - we have about 1000 ton of this

Our beds are high owing to fine particles of dust clinging to the ore & the magnet in test room will not separate this.

Magnesian test shows 69.86 Net. Iron

Took 3 lb & dried - then washed it in a long battery jar with three pails of water. let it in to the bottom by a rubber tube & ore constantly stirred

Before washing 3 lb. 69.86%

After " 2 lb 12 1/2 g 70.22%

" 6 pails " 70.95%

I now took some of the ore & run it through #4 & #8 belt machine

Before reconstituting 69.75%

After " 70.59%

Now I took 3 lb of this & washed it as above 6 pails

Before washing 3 lb. 70.59%

After " 2 lb 13 1/2 g 71.13%

Dust - 3 lb. of dust that had settled on beams for 3 1/2 weeks in Starkhouse, washed in 10 pails of water

Before 3 lb

After 1 lb. 71.67%

Jan 17 1892. Ogden N. Sample #4 was #2 Starkhouse material, carrying 0.2% Mn. This was run through belt machine again & delivered into Starkhouse where a Glover takes dust away & set it aside - A sample of this was sent to Booth, Gares & Allen

190 Jan 1892.

of Phil^o for test & today we received back
 from 66.806
 M. 0.056

It was very damp on the 18th when we ran this
 & since it has been very wet, but we have rigged
 up a heater for it to come through & we have changed
 a device for bringing it from the Stockhouse & putting
 it through heater, better machine, & returning it to the
 Stockhouse where a fan takes out remaining dust.

When we start this I think our ph. will be about
 0.045.

Screens: On this date we have #4, 6 & 7 screens
 finished, #3 & #8 are having the plates clipped.
 #2 is being stripped, #1 the screens are off & ready
 to start on, #5 shaft has to be lengthened & 2 wheels
 to be patched.

Dryer: - 3 bins in place, 2 more are true ready to
 start up, 2 more are finished, round angle chucks
 for the other two - Men are putting timbers together
 for support of beams - frame work for runway is
 up but not hoisted in - has been so hot for 8
 days that very little outside work can be done.

Jan 21 1892 Oplem h.f. Set in #2 Stock house on &
 changes made to improve it

Jan 6 #2 S.H. oil mag. test 69.86%
 B.G. & Blain { 64.576 vint
 0.972 M.

Jan 8 Increased feed from 115 to 160% :-

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Ashore Cinc. 70.21 Tail 1.91
 After " 70.48 " 2.31
 Not Satisfactory fan & take dust out between #2 S.H. &
 Separator 1710 lbs.
 Sample 5 73.9.73. from 64.835
 M. 0.062

Fan reduced to 700 & 5 tons return through the
 sp. Sample 5 73.9.73. Mag. 70.59
 Sep. 66.806
 M. 0.066

Jan 22 1892 Oplem h.f. Have run about 1/2 the ore
 from #2 S.H. back through the mills & into the furnace and
 of S.H. again -

#3, 4, 6, 7 & 8 Screens out of my hands entirely -
 Runways for bts of dryer being covered in -
 Ordered 100 screens from Fraser & Chalmers & 60
 mesh; they must be 0.011" after punching -

Recd: - I notice that the dust is shaken out in
 clouds where the delivery is being
 made in S.H. #2 by falling down a
 board they have placed there; & any
 obstruction like a nail or projection
 brings out lots - The fan is doing
 good work there



Jan 24 1892. New York. Frank was down this morning
 & he says the proportion of wood cut on Smith Mine is:-
 10 1/4 tons, 6 1/2 cords wood, 1/2 four feet, & 1/6 poles.

192 Jan 1992

I think probably how that way for 20000 tons -
Because we don't want 1/2 fine mesh 75 104 tons but we
can cut it into 6 and would then fine would be

104 tons 104 x 124	\$23.55
10 tons 1/4 x 1/4	14.50
16 plates 1/4 x 1/4	12.48
	<hr/> 52.56

10 Cords sold	42.50
12 Cords sold	9.30
	<hr/> 51.80

Lot 104 tons	1.06
R.R. Chicago 10 Cords	10.50

Class 104 tons Lot 104 tons - 11.06

Jan 27 1992. Opden H.). The weather for the last two days
has been down to zero + many desperate mechanics
not at work. A heavy wind blowing with it -

Dryer:- Found plates had not been put in brass right
or as good as they ought to have been done - look #2
+ #3 into shop + altered them

Screens:- All done ready for plates but #5 - Two of them
have screen plates on - #5 shaft now turning -

Separator:- Thomas now putting up bed of separator
(15 up)

Stampplate:- Found a lot of screen plates to for inch -
50 mesh - 10m - I am making one screen of them as they
will screen more, owing to hole being larger, although
they have less number than the others - Also this will
give us a chance to find out how long The new will
last in comparison with steel

193

Feb 1992.

Jan 29 1992 Opden H.). Sunday night -

All Dryer Screen ready to mount -
Stampplate on 6 screens -

#1 ready for plates #2-5 having long plates clipped.

High Mt. Ore - Of the 900 tons (about) that we had in
St. H. + which we refused to 0.052 from 0.072 we have
sold now owing to it being still too high. Gladly has
gone to Bethlehem to see if they can use it

Feb 2, 1992 Opden H.). Hjalmar Lundholm of
the Swedish Geological Survey here yesterday
I showed him around - He said it was the most
interesting thing he had seen in America - I
gave him lots of samples of the ore (as he called it
the dirt) - He was very much astonished that
we were confident of making money out of
such material -

Dryer:- 11 done up + the 12 + 14 still waiting
until the distributor is ready
Screens all finished - All plates on -

Rayburn Co of Kentucky have patterns for new screen
plate holder for 0.075 screen - We have only 1/8
out of 480 on at present -

Party in Mt. Wright trying to sell our high Mt.
#2 St. H. material

Feb 11 1992 Opden H.). I was down to Rayburn Co. Mo -
today and had him make 8 patterns for screen
frames for 14 mesh slot screens - Co Morris Co

W. & D. Co. made these they weighed 35 lbs at 3 1/2¢. Now
 after the fall to 20¢. Taylor costs them for 3 1/2¢
 With 3 fallings he is giving us about 25 per day starting
 about Monday

Dryer 1: All boxes up, distributor being fitted on -
 Belting & runways are almost finished - 1 1/2 screens
 are about half done

Dryer 2: All finished & carpenters putting finishing
 touches on - Trust guards for bottom beddings being
 made -

0-552? Ph ore in #2 S.H. has not been disposed of by
 Jany. Last subscription has been paid to bring
 Capital to \$750,000

Edison General Stock: - Gave up 91 to 99 last
 week - Talk of soon going into the directory
 & Willard retiring - It seems to be general counsel
 that they will increase capital after statement
 is out - This will run down the stock, and it is
 supposed it is being run up by atom change &
 these people are selling to buy their share of the in-
 crease at a probably lower rate -

Feb 6 1892. New York.

Ed. Gen. Stock Co: - movement in favor of consolida-
 tion with Thompson-Houston - \$50,000,000 cap.
 S.H. 1/10,000,000 & Gen. 3/10,000,000, Secum/
 1/1,000,000 - Ed. Gen. Stock par for par - S.H. Mfg.
 for new Co par for par that it be 25¢. S.H. common
 par 25¢ 60 new stock, S.H. the price to be

Spec. Of the 500,000,000 not more than 20% can be
 sold.

Feb. 8 1892. 11 a.m. Open Mf. Mill #2 ran a short
 time today to winter up - All ready to start now
 except we are waiting for brushes for these screens.
 Mill #1 Dryer all O.K. but the millwrights have not
 quite finished off the belting, runways & motions -
 3 of the 1 1/2" screens are altered & the other 10 finishing
 Mill #2 has now a 5' fan that pulls air out of the
 boxes under screens and forces it through the separator
 box & out into tailings box - Separator tailings
 box has also now 3 or 4 fans that pull air out of
 collar and kept it clearer -

Feb 9, 1892. Open Mf. - I took a bottle of #1 S.H.
 material as it was leaving Mill #2 found

64% good through 50 mesh dot screen.

24% " " 100 " wire "

Took some material from 1/2" roller & passed it through

0.096" slot screen found: -

11 1/2% would go through 50 mesh dot screen -

4 1/2% " " 100 " wire "

Made a separation at 50 mesh of both with hand
 magnet & found the S.H. material was much
 browner than the other

This shows that a great deal of dust and emulsion by
 high Sh. has got on in Mill #2 & when wet this
 when once on the separator cannot be taken off

200

Feb 1894

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Recently there has been sharp rivalry between the companies, and prices have been cut so that there has been little profit in the manufacture of electrical machinery for anybody. The consolidation of the companies will give the added advantage that a large concern has over a small one. It will give a larger working capital. It will do away with a competition which has become so sharp that the product of the factories has been worth little more than ordinary hardware.

"There can be no monopoly, for there is no limit to the stock of material available. I do not know that there will be any increase in prices, but there should be an increase of 3 or 4 per cent in the profits by the simple advantage of placing all of the interests under one management.

"There has been some misapprehension as to Mr. Villard's relations to the company. He is not of the consolidated company. He made the negotiations when the Edison General Company was formed, and I suppose made some money out of the transaction. I have heard nothing of the alleged strained relations existing between him and Mr. Morgan."

Mr. Edison said that, in addition to his financial interests in the Edison General, which had been amply protected in the consolidation, he had also two shops which he now controlled and which were no part of the Edison General Company's holdings. One of these was his mill at Orange. From the fact of his ownership of these properties some of the confusion might have arisen. With considerable enthusiasm he spoke of these ventures.

"I cannot waste my time," he said, "over electric-lighting matters, for they are old. I ceased to worry over those illumination years ago, and I have a lot more new material on which to work. Electric lights are too old for me. I simply want to get as large dividends as possible from such stock as I hold. I am not business man enough to stand up

"There is nothing in that story," he said. "Mr. Inault was once my private secretary. We are on the best of terms now. I expect he will

"What will be the effect of the consolidation on the suits now pending between the Thomson-Houston and the Edison Companies?" Mr. Edison was asked.

"I think there are forty or fifty suits in which the companies are interested," Mr. Edison answered. "I do not suppose the consolidation will result in stopping the litigation. The papers in the cases are on file. In many cases there are principles involved which will govern in determining suits over patent rights, etc., with the Westinghouse Company. I suppose these suits will be carried to a decision."

Assumed QP's, or rather we do not raise the temperature of the ore above about 250° Fahr, owing to the fact that the belts that receive it are not covered with asbestos. Yet, I consequently we cannot with the present arrangement take advantage of the fact that air at high temperatures has a capacity for mixtures far

Byers:- Started new dryer with distributor motions making, top 160 Kev or 320 vibrations & bottom 40 or 80 vibrations -

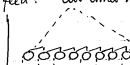
This makes a much better distribution than been running on over 2% wet all afternoon. Run 2 sets rolls without having any signs of logging - I raised the 1 concentrate to about 70% with 1 1/2% tails & now as it started to the over got through the mill.

Have designed to put
stack up to the second
row from top, & deliver
hot air there. We

out of all proportion to its increase — Am making arrangements to use air at 600° Fahr.

4th. Order N. 1.

this week and in consequence we have decided to alter the distributor for dryer and put on a roller feed :- Air comes in as below at 500° Fahr. and is



Odison has been up at Ogden
In consequence we have decided to
dry and put on a roller
below at 500° Fahr. and is
exhausted on top as now -
after passing the hot air
the ore if it gets warm will
be cooled by an air
below.

Siemens & Halske:- The
Tribune Feb 5th says that
Siemens and Halske of
Berlin are about to locate
in Chicago making a
plant there that

of incorporation for a company that will be for

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Feb 1892.

20 Dec 1892

8th O'Brien H. J. Last of ore going into Stock #2 for signs -

Joe Hingh	100 mesh	342.75 gr.	15.17%
"	90 "	101.80	4.5
"	80 "	88.70	3.7
"	70 "	287.30	12.72
"	60 "	119.30	5.28
"	60 "	341.90	16.13
"	40 "	462.75	20.04
"	30 "	464.06	20.54
"	20 "	61.22	2.71
Atroc		4.08	.18
		<u>2250.02 gr.</u>	<u>99.94%</u>

9. O'Brien H. J. Signs of nice mesh screen at present in testing room at O'Brien

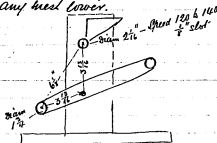
Mesh	Mass	no. of meshes	Count	Significance
5	.034	4 1/2	5	4.87
10	.028	9 1/2	10	9.75
20	.020	17	20	16.5
30	.016	25	30	29.
40	.012	30	40	36.
50	.010	30	40	36.
60	.009	46	49	47 1/2
70	.008 1/2	57	58	57 1/2
80	.007 1/2	62	58	56
90	.007 1/2	77	68	72 1/2
100	.006 1/2	83	89	86
100	.004 1/2		95	95

Note discrepancies -

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10. O'Brien H. J. Exposed alterations going on Mill #2 averaging about 86 tons per day. O'Brien been here a week. He is working up a new method of screening or sizing by belt. Also a process for washing ore concentrates to reduce phosphorus and be able to make ore of any special grade.

Ore sizer - Mch 10 1892
His machine was tried at O'Brien H. J. on Mch. 7, 1892 for sizing down to 50 or any finer lower.



Belt must be a thin one - four roller
Ore drops 3 1/2" on to belt.

From this experimental machine, which would do actual work at a low output, we infer that a belt 4 feet wide, with drop ore into it 2500 ft. 50 mesh per hour.

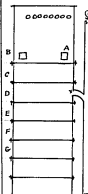
This machine sized to 50 mesh better than our 50 mesh screens.

Of the test of Mch 8th (see #) we took all the ore that passed through 100 mesh and put in a bottle with water and continued shaking

Wed 1892

10.9.40. Am. 63.155 H. 2058 Qm 4⁴
 11.0 " 63.01 " 0.067 " 9

28th Open N. Report - but shows sun

		P.M.				
		2	3	4	5	6
		<div>Boiler</div> <div>Blowdown</div> <div>Exhaust</div>				
<div>Blackburn Spring in</div> <div>" coming out</div> <div>" 1st Floor Main</div>		147	14	14	1-8	1-8
<div>1st Floor Main</div> <div>2nd Floor Main</div>		7	8	9	8	7
<div>1st Floor Main</div> <div>2nd Floor Main</div>		8	1	8	8	8
<div>1st Floor Main</div> <div>2nd Floor Main</div>		440	2300	2300	2300	2300
<div>1st Floor Main</div> <div>2nd Floor Main</div>		19	155	215	215	215
<div>1st Floor Main</div> <div>2nd Floor Main</div>		92	42	42	42	42
<div>1st Floor Main</div> <div>2nd Floor Main</div>		843	910	900	850	780
<div>1st Floor Main</div> <div>2nd Floor Main</div>		160	147	167	126	104
<div>1st Floor Main</div> <div>2nd Floor Main</div>		127	136	166	116	118
<div>1st Floor Main</div> <div>2nd Floor Main</div>		139	121	141	107	104
<div>1st Floor Main</div> <div>2nd Floor Main</div>		109	115	127	112	106
<div>1st Floor Main</div> <div>2nd Floor Main</div>		201	172	303	122	230
<div>1st Floor Main</div> <div>2nd Floor Main</div>		210	272	280	280	280
<div>1st Floor Main</div> <div>2nd Floor Main</div>		274	156	271	180	170
<div>1st Floor Main</div> <div>2nd Floor Main</div>		180	220	180	130	
<div>1st Floor Main</div> <div>2nd Floor Main</div>		138	176	136	122	

See #5 Memo-
gram calculations
sum & term
revelations, etc
figure the table
part of air.

On Wed. 28th I telephoned to Collins as follows:-
 "Boiler working but we are limited to 2 1/2% of water,
 where heat comes in it is at least 1000 F⁰ but when
 it's running the temp. anywhere in box 2 feet above
 it is not over 230 - the box below is hotter than one
 above - my calculations show that we have ample

sufficient heat units even if we carried it into steam hot.
 I'm afraid we don't apply it right. We put in the heat at
 1000⁰ and it follows up the ore and across the dryer
 when there is the greatest possible difference in temp. be-
 tween the incoming ore and the outgoing air - Now
 if we put in the heat too far higher, that is just under
 the feed rolls and take it out about 6 boxes lower the
 hot air strikes the cold ore and goes with it and heats
 up the particles to about 200⁰ when the air goes out
 carrying all the moisture as there is no difference
 of temperature between the ore and the moisture of
 air and water - Can run as we are until we do
 this & can fix to do it as we shall not have to stop -

He answered:- My impression is that if you
 work the blower down so far it will suck two of ore
 out, that is to say a large quantity of ore will be
 sucked out, whereas now it gets so far down before
 it is dry that the blower can't raise it up.

So I understand that the air going through the
 exhaust is 230⁰ and that the air from the pipe is
 1000⁰. If so you have attributed about all the heat
 that it is possible to get and the only remedy must be
 a larger sized fan; doubling the size of blower will
 permit of doubling the amount of moisture in the ore
 as you double the heat units per sec. It looks to me
 as if present arrangement is all right & what is
 required is larger blower - With a big enough
 blower the temp. of the exhaust could be raised to
 any degree notwithstanding the cold ore - You

208 Wed 11/92

do not say how many times per hour of $2\frac{1}{2}$ g/m. pass + collection of claps - gives me temp. of air just as it enters blower. Ad.

50% H₂O. At Edison Laboratory today at Orange. Saw some briquettes of ore he had made with about 8% work of resin per ton. 'Res' looks fine!

#4 Ores. Report of test - made block 10" for the removal of Ph. by Acids. - The following samples made from Optics concentrated 64% iron 586 Ph. all ground to 100 mesh (0065 wire screen), the object being to see what amount of Ph. can be removed by acids under various conditions

Sample 1 B.

100 grams washed 100 mesh
0.500 gm. Hypochloric Acid

Run diluted just sufficient to cover the ore in a 2" diam. bottle + put to rest 24 hours, after this the bottle filled with water stirred + poured off 4 times but the last time the water stayed on for 2 hours then the ore dried

Residue, 68.496 gm 0.024 Ph
H₂O + Clap. 69.11 " 0.032 "

#2 B Same as 1B but 1 gram instead of 50 gm. of acid

B.G. + P.B. 68.496 gm 0.024 Ph
H₂O. 69.11 " 0.032 "

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Apr 11/92

#3 B same as 1B 50 gm acid but amount of water increased in bulk to the bulk of ore

B.G. + P.B. 68.330 gm 0.023 Ph
H₂O. 69.06 " 0.024 "

#4 B same as 3B but 1 gram Hypochloric

B.G. + P.B. 69.576 gm 0.026 Ph
H₂O. 69.84 " 0.026 "

#5 B 100 gm. ^{original} 500 mg. Sulfuric Acid just enough water to cover + worked as 1B

B.G. + P.B. 68.529 gm 0.024 Ph
H₂O. 69.12 " 0.022 "

#6 B. 100 gm washed ore 1 gm Sulfuric Acid just enough water to cover + worked as 1B

B.G. + P.B. 68.576 gm 0.018 Ph
H₂O. 69.64 " 0.017 "

#7 B. same as 5B except water equal in bulk to ore

B.G. + P.B. 68.576 gm 0.026 Ph
H₂O. 69.18 " 0.026 "

#8 B. same as 7B except 1 gm. Sulfuric Acid

B.G. + P.B. 68.663 gm 0.021 Ph
H₂O. 68.87 " 0.024 "

#9 B 100 gm washed 100 mesh 500 mg. Sulfuric

210 Apr 1892

Raid, water to reach $\frac{1}{2}$ " above ore, took 24 hours.
B.G. + B. 68-663 ton 0.028 ph

#10 B. 100 ton wood, 100 med. 500 mg HCl, water
to reach $\frac{1}{2}$ " above ore + took 28 hours
B.G. + B. 68-596 ton 0.026 ph
H.B. 68-31 " 0.032 "

#11 B. Same as 10 B soaked 42 hours
B.G. + B. 68-663 ton 0.026 ph
H.B. 68-10 " 0.033 "

#12 B. Same soaked 96 hours.
B.G. + B. 68-666 ton 0.024 ph
H.B. 68-20 " 0.034 "

Expt 1 - We have taken one of our blowers from the top + put it underneath the fire + now we seem to have a surplus of heat. We get about 1100°F in stack + also at surface in the bottom to keep the ore as it comes in hot at 220° - Ore not above 2% moisture but we can take care of any quantity that the mill gives us

10 Apr. Capten H.J. Olsen came up today and explained to us what he wanted for brick-making. As Thomas' arm is not well yet I volunteered to design it. The process is:

1. Mixing in a machine with a rammer of Soda

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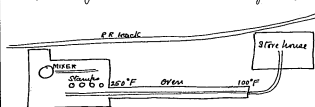
(which we also have to make)

2. Pressing in a mould with these strokes of a stamp mill

3. Putting into a slow oven at about 250°F + keeping there for about 2 hours.

4. Stacking up for shipment

16th Apr. Capten H.J. Brickling Apparatus. We have general plans now and are laying out ground.



19 Apr. Capten H.J. Laid out building for brick-making apparatus and San digging post holes and filling in etc.

26 Apr. Capten H.J. All path in ground for new brick-making building and stove laid for corner of large part of building + tunnel. Thomas found gears for mine and large pot stove (in Newark N.J.) for heating tunnel

Expt 1 - running all day. It takes now 87 about 3 1/2% water + 40 tons per hour besides drying the rest of the ore so that the ore going into #1 Stack is under 2% water - The flume (2 Stortveit)

212 Apr 1892

one lot out out badly & we must replace these in the fall by a large flat from which will take it out slowly & in large volume.

Only selling about 60 tons per day and the average for the week up to Friday is 91 tons with a maximum of 150 & minimum of 28 tons.

22 Apr. Weight - dry weight Nov 23 1891.
162 - 9½ = 152½ lbs.

Open N^o 1. Ground all ready for brick building, all post set, foundations for mixer in and 50 feet foundation in for heating tunnel. Start with 18 carpenters to be here Monday - All the 8x8 timbers for sills on ground also a great deal of other stuff.

26 Apr. Open N^o 1. Piece of Ore: -

Have writing to Perry says that he is advised that William Kubie's furnace is assaying as follows for different charges.

55-120 net ton	0.008 ph
55-220 "	0.009 "
55-750 "	0.009 "
55-000 "	0.009 "

Can be bought today (Apr 16) at \$3.85 per ton f.o.b. Rio Grande per unit -

Lewis who used to be with the Lamp Co came up on 5 p.m. train to talk to me about putting money

Apr 1892 213

into our scheme in Northern California - He went back on same train as I told him I could not entertain any proposition for immediate return I could not see it everyday if I wanted to -

Brick building: - At present we have got no carpenters as yet on the new brick building - We have the mixer all framed together and a large part of the tunnel built - Certainly expect 10 or 12 carpenters tomorrow.

3rd day. Open N^o 1. New brick building almost finished - Mixer timbers all up - Timbers for stamps here & to be put up tomorrow - Tunnel not quite finished - Runway from stockhouse being put up.

Screens: - Experiments with the screens show that by putting weight on for 5 sec & off 20 sec. very much more can be screened because the screen is entirely freed about once in a half minute; this gives us lots of capacity and it will not be necessary just at this moment to make the other belt screen.

Other pulleys: - I am making up now a lot of other pulleys & head & tail pulleys, after the pattern I designed for cheapness; these spoke wheels and wood on the periphery turned up.

Olden Gen. Eke, Co: - I hear the new board of directors

214 May 1892

in h. b. (that is for the Gen. Elect. Co.)
Ames, Corbridge, Stiggam, Coffin, Capt. Griffin.
J. P. Morgan, J. D. E. Carter, D. C. Miller, & J.
M. Hornsby.

General Electric Co.:- Syndicate to guarantee £500,000
bonds. I took \$20,000 interest.

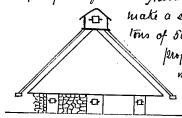
Edison Electric Mfg. Co. of N. Y.:- I have taken £25,000
interest in the syndicate.

Johnson Standardizing Co.:- I was offered today an
interest in a loan to be made to this co. of \$20,000
at 6% for 6 months on security of \$300,000 par value
of Interior Conduit Co. stock - the loan having
the right to take up stock at any time - I did
not take it - Object:- development of dynamo
and motor of S. N. Johnson for R. R. work.

10 May. Capen N. J.

Have surveyed the ground to
make a storehouse #3 for 25,000
tons of 80 mesh concentrate - We
perhaps build it so that it
is nothing more than a
roof with a bell way
in top and delivery
beds under each.

new brickling plant almost ready to start.



May 1892 215

Total expense at Capen N. J. for April
Rent + General Expenses. \$2,252.58
Royalties on mine 1,157.92
" " Land 1,069.92
\$ 4,480.42

Edison General Co.:- I signed ^{representing} bonds for \$50,000 bonds
Monday the 9th. Edison General Trust is -
bonds sold today at 112 1/2 (May 11th).

11th May. Capen N. J. Dryden:- We have no trouble
with snow now - We have had no trouble since
about April 1st.
Reason:- I used 1/40 per cent of 280 lb.

16th May. Capen N. J. Bricked Ore:- Made first
bricks today. Weight about 48 lbs. size 8" x 8"
and circular



May 27. Capen N. J. Bricking:- Telephone Batcher
to Capen:- Find we have only about 1/2 of the weight
we ought to have for 8" x 8" brick - Am putting on
330 lb more - Small mould made at laboratory
makes splendid brick with three blows and then
bake at an ordinary temperature to hard brick in
two hours easy - Ours never hard all through
even if left in all night, although outside very
hard - Too much heat does not do as it

makes them come out brown. Am trying large brick with an inch washer in middle of mould so that they come out as ten cakes $3\frac{1}{2}$ " thick each. Great thing is however more pressure per sq. inch - Mixer works very well at 65° comp & ten.

Ordian to Batchelor - How would it do to increase hole from $1\frac{1}{2}$ " \times $2\frac{1}{2}$ " \times 3" then increase pressure so that it is equal per sq. inch to small mould. It seems to me that if the big brick is made so that the heat does not have to penetrate deeper than the small brick and the pressure per sq. inch is made same it will be O.K.

Round bricks are better for blast furnaces. Could you not manage to make a mould for 4 small bricks in one mould at once, increasing the pressure accordingly. Counting material cost for 250 lb. so the saving from 80 to 65° is a big item.

If greater pressure or better mixing will permit 60° to be used, it will be a big item in a year.

20th May, Ogden N.J. Telephone Batchelor to Osram - What you suggest is O.K. but I cannot increase weight to take care of large mould, I would want 2450 lb. With a 3" hole it has still 43" surface whilst small mould has only 16" - With my 350° secta & 3" more drop I can take care of 26 to 26". Can make a block 5" \times 5" \times 8" without hole, worth weight about 24". Am trying 3" hole in present mould - One of small bricks was just as hard as the rest although it had not been in oven at all.

it had simply on a piece of sheet iron on the sand over the all night. Have not stamped today am putting up one of old rolls as an anvil.

Brickling:- I find that the 3" hole in large mould, as also the making of cakes instead of 5" cylinders are neither of them any good, they don't dry inside; the hole seems to be no good. I think it would be if they could be set up so that the air blew through them.

8th June Ogden N.J. - Osram & I have been to Andersen's & seen the brickling machines of the Leigh & Widdowson Coal Co. (not in use) Yates have been to Mahanoy City & have seen one here running belonging to the Reading Anthracite Pressed Fuel Co. We have bought the Andersen machines & Jim all is now taking them down & shipping them here.

11 June Ogden N.J.
Brickling plant:- Oven fire bricked & fan exhausting at other end - I think with good fire we can get a run through in 20 min.
Stackhouse #3. Foundations almost done. Sawmill cutting roof timbers.
Shipments:- June 140 tons per day.
Screening:- Has been very much increased, screens have been supplied with the new device for putting

218 June 1892

on brushes with weight & lifting up again; and all have been increased - Result about 28 or 29 ton from all.

Cable conveyor - The short cable broke at Option & we figured up the cost of it if it could not be repaired - It had carried 65,000 tons & we figure it was 14¢ per ton - Cooper Hewitt's men knoover spliced it again, taking the two ends and putting them together in the middle.

Chicago Ed. Co. - Insull has accepted the Pres^y of this Co & gone to Chicago about 2 weeks ago - I think a very wise move for him -

Magnetism, Study - Increase of magnetism by changing a field from 16 amp amperes - Hds's paper, Manchester Railway Co. 1878. 26 Eng. Mech. Aug 5 1878 - Also letter of Murray to the Engineer July 28 1886

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A FAREWELL BANQUET TO MR. SAMUEL INSULL.

At Delmonico's this city, on Friday, June 24, a farewell banquet was given to Mr. Samuel Insull by a number of his friends on the occasion of his leaving New York to take up the duties of president of the Chicago Edison Co. Subjoined is a list of those subscribing to the banquet:

Thomas A. Edison, O. T. Crocker, O. A. Spofford, J. H. Herriot, J. C. Sanderson, R. B. Bowker, John Kneel, John Muir, T. C. Martin, S. B. Eaton, J. G. Beall, A. Arango, John S. Wise, C. D. Smith, C. H. Coster, W. P. Hix, F. A. Stevenson, E. B. Johnson, H. West, Leonard, C. T. Hughes, R. H. Lewis, C. L. Edgar, I. son, H. West, Leonard, F. S. Hastings, W. E. Gilmore, Henry Villard, S. D. Greene, W. S. Perry, A. Yocum, J. P. Ord, G. W. Havens, C. H. Schmitt, A. S. Bore, G. M. Frazier, F. R. Upton, Chase, Hatch, C. A. Coffin, J. P. Smith, A. E. Kennedy, Eugene Griffin, R. W. Little, J. P. Kelly, F. P. Fish, Chase, R. Lloyd, J. Huntman, F. E. Morgan, R. McDonald, Geo. H. Row, E. Clark, H. L. Brewster.

Nearly all the above were present. Major Sherburne Eaton officiated most gracefully as toastmaster, and speeches of unusual wit and felicity were made by Messrs J. B. West, S. Insull, C. A. Coffin, Eugene Griffin, John I. Dege, E. H. Johnson, C. L. Edgar, R. Lewis, C. T. Ord. During the evening a solid silver punch bowl was presented to Mr. Insull. The occasion was interesting for many reasons, and emphasized the fact that Mr. Insull's eleven years of close association with Mr. Edison had covered a tremendous and unparalleled industrial development in the electrical field. Although very much aware to banquet and converse - even of the best - Mr. Edison was present to do honor to one who had served him so long, so loyally and so brilliantly. Altogether the dinner was a great success, and the smoothness with which all the arrangements were carried out was due to the executive ability of Messrs. Deas Greene and Dehan.

Mr. Insull leaves New York for Chicago on June 29, and will at once enter upon his new work.

[ITEM FOUND IN BOOK]

Siemens & Halske Berlin
Charlottenburger-Weck



Lichtbogen bei 20000 Volt.
(Wechselstrom)
 $\frac{1}{2}$ der natürlichen Grösse.

37:

months with Rogers, Joe Free
 & Apple - how he has
 Thomson put all time in
 Room 4

Interference - March 1st 1879
 K. H. Byer & W. Griffin
 came to my rooms at the Goddard
 to talk about my testimony to
 be given in suit before Judge
 Acheson of Pittsburgh - It
 the same as given by me in
 1871 in the interference suit
 of Sawyer v. Mann & Acheson
 in paper carbon -
 It seems that the paper
 carbon that I put into a
 Garment in Aug or Sept
 1877 are considered by the
 Judge as only carbon.

169

	4010 87
	80 34 77
14 -	17 5 2 46
	44 6 6 77
14 -	37 5 4 77
15 -	37 5 4 77
	37 5 4 77
16 -	37 5 4 77
	37 5 4 77
17 -	37 5 4 77
	37 5 4 77
18 -	37 5 4 77
	37 5 4 77
19 -	37 5 4 77
	37 5 4 77
20 -	37 5 4 77
	37 5 4 77
21 -	37 5 4 77
	37 5 4 77
22 -	37 5 4 77
	37 5 4 77
23 -	37 5 4 77
	37 5 4 77
24 -	37 5 4 77
	37 5 4 77

After 2 years
 6% & could sell at
 \$36.40

170:

Exp at Split - on a base of
4 tons to 7 lb concentrate -

Mining 30 - 1.20

Milling 10 .40

Refining .10

Royalties .50

Wear & Tear 10

68 1/2 lbs. 2.38

At Bethlehem 82

3.14

Cuba Ore =

Mining 12.5

Freight 2.00

Milling 25

Refining 15

Wear & Tear 4.25

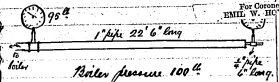
At Bethlehem 62

59 1/2 4.84

Experiments

Dec. 29/1913

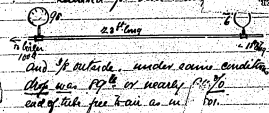
501. Exp of pressure in pipe.



The small 1/2" pipe was blowing out
for 6 lbs air

Exp of pressure 80% or 82 1/2 per cent.

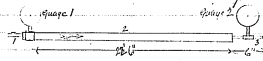
502. Same exp. but a brass tube substituted for iron & air.



and 1/2 outside, under same condition
exp was 82% or nearly 80%
end of tube per train as in 501.

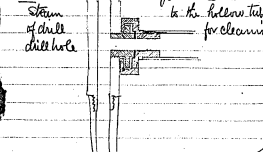
[ITEM FOUND IN BOOK]

508 Shot of pressure in Steam pipes Aug 1st 1893

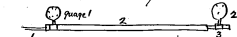


Feet from	140	125	110	90	70						
1	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$						
2	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$						
3	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$						
Gauge 1	134	119	108	88	64						
Gauge 2	100	97	84	66	52						

504 Steam Joint to be in to the hollow tube for cleaning Aug 1st 1893



506 Drop of pressure in steam pipe Aug 2, 1893



Water Reads	140	125	110	90	70	
Rise {	$1\frac{1}{2}$ "	"	"	"	"	4" long
2	$1\frac{1}{2}$ "	"	"	"	"	23 feet long
3	$1\frac{1}{2}$ "	"	"	"	"	6" long
Gauge 1	136	123	110	87	67	
" 2	75	67	54	44	34	End of steam pipe as 503.

506. Drop of pressure in steam pipe Aug 4, 1893
Rise same as in 503 but $\frac{3}{4}$ " of 2"

Measure	140	125	110	90	70	
Gauge 1	121	113	104	96	88	Rise per $\frac{1}{2}$ " hole
" 1	134	120	108	82	65	free
" 2	70	72	64	46	34	free
" 2	119	99	88	68	57	$\frac{1}{2}$ " hole
$\frac{1}{2}$ " pipe						
Gauge 1	133	118	100	78	61	Rise per $\frac{1}{2}$ " hole
" 2	136	124	108	86	70	free
" 2	27	22	17	9	7	free
" 2	28	20	16	12	8	free

The figures with the lines under are the pressures on the gauges on the preceding experiment when a small brass nipple with a $\frac{1}{8}$ " hole is put in end of pipe

50%

Exp of Pressure in Pipe Aug. 8th 1893
Compressed Air

Compressor	Comp. Nipple	Gauge 1	2	Com.
1" pipe	75	65	13%	
$\frac{1}{2}$ " "	77	53	31%	
$\frac{3}{8}$ " "	75	42	44%	
$\frac{1}{4}$ " "	76	11	86%	
$\frac{1}{8}$ " pipe and $\frac{1}{8}$ " nipple	80	34	57%	
$\frac{1}{8}$ " brass tube	82	20	70%	

50%

Aug 8 1893

If I was to drill into a $1\frac{1}{4}$ " Oct Bar and cut out a groove for a $\frac{3}{8}$ " outside copper tube the section of steel left will be greater than that of $1\frac{1}{2}$ " bar as



2184 K 1912

509

Record of holes drilled -

Aug 11 1893

Explanation of these figures -

	1	2	3	4	5	6	7	8
<i>DATE 1893</i>	Aug 8	11	12	15	15			
<i>digging over soil</i>	18	17	20	40	24	14	15	
<i>digging really</i>		10	7	8	7	10	5	
<i>Drilling # 1</i>	2	12	8 1/2	4 1/2	3	4	8	6
	3	18	9	4	5	6	7	5
	4	11	7	6	5	6	6	4
	5	11 1/2	15	9	8	6	13	4
	6	12	10	9	6	7	10	9
	7	9	10	9	7	8	9	5
	8	7	7	11	4	6	10	7
<i>Chasing drills</i>	26							
<i>Chasing holes</i>	46	72 1/2	63 1/2		57	71	44	
<i>Spills for 1000 ft</i>		1/2	2					
<i>Repairs</i>				15		13	10	18
<i>Number of men</i>								
<i>Time taken to drill</i>	191	148	125	131	187	144	89	
<i>Time for drills</i>	34							
<i>Depth of hole</i>	19'	19'	19'	19'	19'	19'	19'	
<i>Total time</i>	225	168	143	230	151	154	124	
<i>Actual drill time</i>	90	72 1/2			50	73	40	
<i>"Chasing" time</i>	72				10 1/2	14 1/2	10 1/2	

10 1/2 78 1/2 feet

*1 Hole - drilled in ordinary manner
just as they have always drilled but in
rock near old dryer - planned by the
old method of Chamber and a waste
valve in bottom -

*2. Drilled in soft rock weather worn
on top of west bank of #2 cut.

*3. Hole 5 feet away from 2. Cleaned
between every drill and steam +
also in between 15 times in all.
Steam being supplied by a branch
from drill + connected to pipe let
down alongside drill by a joint
like #504.

*4. #22 - Now drilled on top of Collier
on West side where rock was pretty
soft + made much mud - Steam
pressure was 90 lb from boiler on top
of hill - Used 8 hole + cleaned
about 13 or 14 times with air bag
+ two short steam pipes, the drill
man making suggestion each time
for cleaning - Top drill man
has a float about 1 ft long to wall

[ITEM FOUND IN BOOK]

on and a secret kept tube in hypodermic
ke work.
The average time of last two days was
94 to feet per day of 10 hrs

510

Aug 16th 1893

Cleaning holes in rock cherting
 used keeping the hole full of water
 but the first chert stick - the stream
 of water only packs the sand round
 the chert just above the wing.

511

After hole #22 we picked up the
 Chertman for a considerable
 distance away 500-120 lbs -
 We also made a tripod to hold
 the cleaning tube with a
 rope & pulley to raise & lower
 it - We made the connection
 permanent or cleaning
 tube I always have one
 length



[ITEM FOUND IN BOOK]

* Had to clean away a lot of stones

[illegible]

[ITEM FOUND IN BOOK]

	19	20	21	22
Stable	18	"	"	"
Changung 3 days	13	14	20	
Washing	1	5	4	6
	2	5	4	7
	3	6	5	4
	4	5	4	4
	5	7	7	4
	6	8	6	13
	7	8	10	9 1/2
	8	9	6	5
Changung 3 days		34	38	44 1/2
Changung N° 1		11	14	14
1/2 tons in 1/2		85	84	94
1/2 tons in 1/2		18	8	8
Angkor				
Left time	98	98	114	
Actual time	51	46	45	
Bad Road				
Refuge				4
Washing 3 days				

18th Aug. drilled
5 holes + 2 drills on
100 feet

RAILROADS
THE NEW YORK AND HUDSON RIVER RAILROAD
 One of the new trains of the Great Central road
 which yesterday afternoon was the outcome of the
 New York Central and Hudson River Railroad, and
 the largest locomotive in the world. The railroad
 company is in the effort to reach speed and power in
 locomotive construction both the number of steel and
 iron of the above in West Albany. The locomotive was
 originally one of the large engines with driving wheels
 8 feet 6 inches in diameter. The standard wheel is
 5 feet 6 inches in diameter. As exemplified, it has
 driving wheels with a diameter of 7 feet and 6 inches,
 and the spread or distance between the axle of the
 wheels is 6 feet. The total length of locomotive and
 tender is 80 feet and the top of the smokestack is about
 11 feet from the rails. The tops of the smokestack
 and chimney are nearly on a level.
 The weight of the locomotive is 100,000 pounds,
 exclusive of which runs upon the four driving wheels.
 The cylinder has a diameter of 19 inches and a length
 of 46 inches. In order to make up for the loss of
 power resulting from enlarging the size of the wheels,
 the steam pressure was increased. The smokestack
 upon the frame and the door is placed at an angle.
 The locomotive is for service with the Empire State
 Express, and the officers of the road are confident
 that a record of record-breaking is at hand. The
 new type of the motor will take place in history
 before long it will have a chance to show its
 speed in a race with time.

Charles Batchelor Journal, Cat. 1339

This journal covers the period November 4, 1905-June 13, 1908 and contains entries by Batchelor about his business and personal affairs. There are also numerous pages of reminiscences about Edison and his inventions. Included are Batchelor's recollections regarding the electromotograph, the incandescent lamp, the phonograph, and the storage battery. The book contains 300 numbered pages. Only the recollections about Edison have been filmed.

1006 New York

Oct 6 Sat Wet Taylor & Co all day.

57

7 Sun Damp & Bule

Granby Consolidated Mining, Smelting & Power Co.—

Report.—The results for the year ending June 30 were:

Year—	Assets	Liab.	Prof.	Dividends	Ret. sur.
1905-06.....	\$1,251,400	\$1,250,017	\$810,000		\$1,015,617
1904-05.....	1,745,145	712,042			712,040

Average selling price of copper produced, 17.74 cents per lb.; of silver, 64.08 cents an ounce and gold \$25 an ounce. The net cost of copper, after deducting the gold and silver values, was 8.30 cents per lb. Construction expenses during the year amounted to \$100,075, and \$350,440 was expended to acquire new properties. Total surplus June 30 1906, \$2,547,730. The company produced 10,020,011 lbs. of copper, compared with 14,227,422 in the previous year; 318,847 ounces of silver, against 212,180; and 30,120 ounces of gold, against 22,861.—V. 81, p. 1612.

8 Mon. Fine Taylor's all day.

Registered & day.

9 Tues. Very Wet Taylor's all day.

No servants yet. Paid bill of Miss Galbraith 11th for 16 days at Sanitarium for S. G. B.

10 Wed. Fine Taylor's all day.

Miss Taylor married tonight—H. B. & I went over—It was a very nice affair got home by half past eleven
No servants yet.

11 Thurs. Fine but disagreeable wind & cold—Taylor's all day.
Dr. Doctor has been advising Emma to take quite some rest for about a week.

Start Johnson 50 today Granby 15.

Read #22. Consists by Winston Churchill

12 Fri. Fine Taylor & Co all day. Furnace started—
At Hergenthaler ship & day to test some bars of best iron—
See

* My recollections of W. Edison

#1 The invention of the Phonograph.

This occurred at West Park N. Y. in the Edison Laboratory.

about the middle of the month of November 1877. I was Mr. W. Edison's chief assistant at that time and had been so for some years — He had been at work off and on for years previous to this time and had developed a system of automatic telegraphy, one of the instruments for which consisted of a rapidly running small wheel carrying forward a strip of paper, with a stylus resting on it to record chemically the dots & dashes that came over the line — Some of these instruments we had in the laboratory & much of the paper —

We had also for a long time been developing the Edison phonograph, an instrument in which a diaphragm was made to put a varying pressure upon a button of pressed carbon by the vibrations produced by the human voice — Many of these instruments were in the laboratory at the time and we used them daily —

Some years previous to this date we had designed and made some machines for coating paper with paraffin (similar to the paper now used to wrap candies in) for making condensers for electrical work and a large lot of variable thickness of this paper coated and uncoated was stocked away in the cupboards —

When making different sized telephone diaphragms it was a very common usage to mount them in a frame with a work-piece, hold them up, and talk to them in a loud or low voice; at the same time putting a finger close to the center to feel how much vibration was communicated to them.


One night, after supper (which was prepared for at midnight) and at which all the principal workers sat down to gettin'; Mr. Edison who had been trying different diaphragms in this manner suddenly remarked "Do you know Karl, I believe if we put a point on the center of that diaphragm and talked to it, whilst we pulled some of that waxed paper under it,

so that it could indent it, it would give us back talking when we pulled the paper through the second time!" — The brilliancy of the suggestion did not at first strike any gas — It was so obvious that it would do so that we could say "Why of course it must!"

Said Mr. W. "try it mighty quick!" and we went to work — Mr. Meusi the Chief Mechanician took the diaphragm to solder on to it at the middle a needle point about 1/8" long; he also took one of the automatic telegraph wheels and stands to fasten the diaphragm to so that we could draw the paper through easily.

Tested and got ready some strips of paper of different thicknesses of paraffin coating — It was a matter of an hour or so when we all got together again to make a trial — We fixed the instrument on to a table and I put in a strip of paper and adjusted the needle point down until it just pressed lightly on the paper — Mr. Edison sat down and putting his mouth to the mouthpiece delivered one of our favorite stereotyped sentences used in experimenting on the telephone "Mary had a little lamb" whilst I pulled the paper through —

We looked at the strip and noticed the singular marks, then we put it in again and I pulled it through as many times at the same speed as I had pulled it in the first place and we got very ad ell am" something that was not fine talking, but the shape fit was there, and so like the talking that we all got out a yell of satisfaction and a "Hallelujah!" there!! and shook hands all round — We tried it many times and in many different ways continually improving the apparatus during the early morning — During the time that some of these changes were being made Edison & I would talk about the possibilities of such communication and it was then that we fully realized the brilliancy of the suggestion

and the magnitude of its possible applications - Before breakfast the next morning we had reproduced almost perfect articulation from a strip of the board paper which I had embossed as it were  with a ridge in the middle running the whole length, the needle point in this case was ground chisel shaped.

Before the next night we had reproduced speech from a strip of tin-foil using again a rounded point needle, this was so remarkable that we decided to design a machine to experiment with. In a few days about the beginning of Dec 1877 we had this instrument finished. It consisted of a cylinder of brass turned by hand that was provided on its surface with a spiral groove running the whole length and being about 8" apart; the shaft also was cut the same pitch, so that when the handle was turned the cylinder moved forward uniformly.

A talking diaphragm was mounted on one side of the cylinder to record the speech, and a second more delicate diaphragm was mounted on the other side to reproduce the same - Each diaphragm could be moved away from the cylinder at will so that only one was in operation at a time.

So fast that the steam thread on the shaft engaged with, could also be disengaged so that the cylinder could be set back quick.

The cylinder was covered with a sheet of tin-foil and suitable devices were provided to hold it - This sheet could be put on and reproduced many times - The needle was generally used was a rounded point - Many thousands of experiments were made with this machine, and similar ones made immediately after, some of which were exhibited in different parts of the country & Europe whilst great crowds of people came almost every day to Menlo Park to hear with astonishment the reproduction of their own

19th Dec. New York.

The original instrument here described is now in the South Kensington Museum London, Edison having presented it to that Institution.

19 Sat. Very fine Taylor & Co all day. Jim off east nothing for Margenthaler today.

14 Sun. Very fine

Brooklyn Ferry Co. - Majority Deposited. - The Protective Committee for the first mortgage bonds announced Wednesday that more than a majority of the bonds had been deposited with the Knickerbocker Trust Co. under the agreement dated Aug. 29 last. The time for depositing the bonds will expire Oct. 15. - V. M. p. 274.

15 Mon. Fine Taylor & Co all day.

Went down to Denton 115 Liberty & from there to their storehouse in Jersey City. Bought a Cincinnati planer 24 x 26 x 8" \$110 - Chuck & time & freight.

Had a talk with Mr. Storm about making knee joints.

16 Tues. Fine Taylor & Co all day. Mr. Little & Little & Raney called today to see if he could buy into our concern; I told him & talked to him and after some conversation we decided to leave the matter until 'Gels back' (he goes away tomorrow to get some about 3 weeks - Mr. Brown reports today that the iron is the best they have ever had.

Our new planer got here today all right.

Saw Mr. Storms today and looked over his books of sales of jewel parts - They were about 7000 per year at 40 lbs each. This could be very much increased if he could always get them.

Let the furnace fire die out again today - it is very warm.

17 Wed. Fine Taylor & Co all day. Taylor gone off on a

* My recollections of Edison #2

An early opinion of Edison on the Storage battery
In January 1883 the French Edison Co were negotiating with M. Garnier the architect of the Paris Opera house for the lighting of that building with incandescence lamps - At that time there were no Central Stations for distributing this method of lighting in Paris and the City did not permit of incandescent lamps being installed in the buildings or even under the sidewalks and the only possible way seemed to be either dynamos driven by Gas engines or by Storage batteries - In case the latter were used they would have to be recharged by dynamos driven by Gas engines or steam engines of small power - The largest Gas engine at that time did not exceed 50 H.P. - The Storage battery as a commercial success was quite new, a large company having shortly before been formed to work the Traue & some other patents I think - They had a few small installations running and one or two buses on the streets of Paris - I was very much against taking such a risk with an installation (very large at that time) of 8000 lamps with batteries because I had no experience with them and was very busy figuring out a plant with Gas engines -

M. Garnier had pretty well decided & had expressed himself that no installation should go in there but a continuation of the Edison system run by storage batteries -

I did not dare to say it could not be done so we had a few conferences to find out what guarantees they could give that such an installation if made would be successful -

Also my figures for a Gas engine plant showed such a formidable array of machinery to be put in the cellar of the house that it seemed desirable to know if it could be

done any other way. The principal negotiator for the battery company was a certain Mr. Phillips who had earned an immense reputation for failing in some enormous railroad financing. He was a very bright man but somewhat brusque and short. I was somewhat in a quandary what to do when the negotiations were suddenly brought to a close in a somewhat peculiar and unexpected manner.

When the negotiations had proceeded to the point where I must have some information that I could depend upon as regards the performance of the cells under such a big load, Mr. Phillips seemed to have an idea that I was not favorably impressed for he suddenly left his seat and brought from his coat pocket a newspaper which he doubled up so as to show an article heavily underlined in places with blue pencil. He handed this to me and asked me if I thought Mr. Edison made those remarks, pointing to an underlined portion.

I took the paper and found it to be a copy of the N.Y. World some days before, and the article was the description of an interview of a World reporter with Mr. Edison at his laboratory or office. The underlined part was "Mr. Edison answered 'Hell you whenever a man begins to talk storage battery, it brings out all his latent capacity for lying'".

I said that I thought it probable he might have said it as we had never had much encouragement from that line of experiment. Mr. Phillips, putting on his coat said "Well if that is so I want nothing more to do with Mr. Edison".

This ended the affair for the time.

10 Nov. Still all covered with ice. Taylor & Co. all day
wet and not much doing on new yard-shed

76
 Dec 1976

21 Fri. Very Wet. This is my birthday and I was remembered at home more than I was worth. In all went to the Trade #15 at night. Belasco's I saw a charming piece called The King of the Kuchel quite the best little thing that we have seen for some time. We met Mr. Kegera & Umberto Krauss & they joined us at supper in the quiet room of the Hotel Hotel. Went to Taylor & Co. all day.

22 My recollections of October #3 The Centennial medals for the Electric In. In 1876 W. Edison made an exhibit of his Electric Pen and Expanding Press at the Centennial Exhibition. This was a novel device for making any number of copies from a single writing in a short time. He had built a factory for this at Menlo Park N.J. and I had an office for the sale of the same at 41 Bay Street New York City. I attended to the factory and the office in the daytime and then joined W. E. at the laboratory for the best part of the remaining 24 hours of 1. It was a very awful novelty and took well with the public so much so that I had customers in almost all the civilized parts of the world.

The Exhibition at Philadelphia though well got and bestowed on us a bronze medal. One day this was presented to me at the office by some government officer. On that day W. E. happened to be in the office and was waiting for me to go out on my regular train. As was usual in such cases all the way to the Ferry we talked over the different inventions of his that we were developing at the laboratory and as interested and bound up in the subject were we that I got up from the boat and left the medal in its proper case on the seat in the boat. We had almost got to the train at Jersey City before I found my loss. When

77

I realized that I had left it I mentioned it to him & started back to get it, but he called me back saying 'But better. Some one will surely have picked it up' - and we talked the matter over the way out to Menlo Park. I doubt if he has ever given it a thought since -

22 Sat. Wet.

23 Sun. Fine again

24 Mon. Fine Taylor & Co. all day

25 Tues. Fine Xmas day Got silver watch from Gule Tuma

26 Wed. Fine Taylor & Co. all day.

27 Thurs. Fine Taylor & Co. all day. Two lines of sky light flames on -

28 Fri. Wet. Taylor & Co. all day. M.

Que Genie is at night. Read #39 The Patriot by Antonio Fogazzaro. Italian novelist. His Nation is very much in vogue at present on account of his novel Il Santo being placed on the Index. It is said to be exceedingly clever but from what I read in the Patriot I see no signs of genius. It is just a common well written story with very little of its title showing in the reading. Read 34 Much of Power by Maynard Rippling

29 Sat. Wet. Taylor & Co.

※ Needletons of Edison #4. The story of carbonizing a paper for incandescent lamps. Swager Museum to Edison: As a witness for Edison in his suit at 65 5th Avenue July 8th 1881 I was asked to give a summary of the progress of the invention of incandescent conductors for electric light made of carbonized paper from the beginning up to the commercial lamp. I is 26 years ago but I think it states the facts as we had gone through them.

I said:—
"The history of electric lighting by incandescence with paper carbon by W. Edison, as far as I know it, is as follows:— In the summer of 1877 he used strips of paper carbonized as an incandescent conductor in vacuum, and the lamp in which they were used is now in evidence and marked Exhibit. Edison's First Incandescent Lamp. I should have said here that I remember Edison, within a day or two previous to this lamp being made, using carbonized paper as an incandescent conductor between two electrodes of a battery, but in the open air. The next experiment, or series of experiments, that I call to mind are the two which I have before spoken of as being made in August or September 1878— certain point my whole time and attention began to be devoted to development of his system of incandescent electric lighting. These paper carbons were made by coating thin papers with lampblack and tar, and rolling up tightly into a rod, drying and carbonizing the same in a suitable furnace. Some of these paper carbons were put in between the two electrodes in an electric circuit and raised to incandescence in a vacuum. At this time carbons made of paper were not the only things that we tried as incandescent conductors in a vacuum. We made many experiments with hard carbons, wood carbons, and some metals, such as platinum, nickel and iron. It had early been decided by W. Edison that the requisite material for his incandescent lamp should have a great resistance combined with the least possible surface, and I remember well that at this

time and previous to this we used to expect that we should be able to get a substance from an incandescent conductor that would give us at least 500 ohms resistance. The result of this latter series of experiments in vacuum had shown us that in order to get a high resistance lamp from carbon in any form, it would have to be cut in an exceedingly fine filament. The paper carbons which we tried were larger than we should have to use if we wanted a higher resistance. With the vacuum we then got, and which we considered at that time to be good, the carbons lasted at the most from 10 to 15 minutes in a state of incandescence. The experiments on platinum led us to hope that it might be easier to get a high resistance from that metal than from carbon. From the date of the finishing of these experiments which, I believe was towards the latter end of October 1878 W. Edison turned his attention to lamps in which the incandescing conductors were formed of metals and alloys of metals. During the last part of the year 1878 and up to October 1879, I made at W. Edison's request, a very large number of lamps having platinum and platinum-iridium comprising the incandescent conductor. A great many of these lamps had their conductors coated with insulating material, in order to be able to wind them up close and get them into as small a space as possible in order to offer the least radiating surface. W. Edison very frequently sat down at my table and worked for hours keeping fire on these experiments. Our conversation frequently was directed to getting the highest resistance in the least possible space. I remember once or twice during these experiments, early in 1879, he remarked how easy it would be to get this resistance if carbon was only stable. During the time that I was experimenting on these lamps he had been busy experimenting to perfect the different apparatus comprising

his electric lighting system as a whole. I had also worked on these matters, but as our lamp was an exceedingly difficult job the majority of my time, both night and day, with the exception of a week or two in which I devoted some time to telephones, was spent on the lamp - He had succeeded in making a more perfect dynamo machine - In testing the lamps with platinum conductors he had been continually improving the apparatus for exhausting the globe.

In October 1879, when he had got a very perfect vacuum for his lamps, he suggested the use again of carbonized paper as a conductor, and accordingly he had me cut a fine filament of paper, which we carbonized and put in a globe. This filament, I believe, was cut straight from paper and bent round, previous to putting in the carbonizing chamber. I do not remember what we did with this lamp afterwards: but within a day or so of that I cut a loop from paper similar in shape to the one now in Edison's *Universal Incandescent Electric Lamp*. At the same time that these were being tried, I also made lamps of loops of carbonized thread, carbonized flax, fine filaments of lampblack and tar rolled up and baked, and, also, threads which had been treated with lampblack and tar previous to carbonization. All these things were used as incandescent conductors about the same time, the most satisfactory then being the carbonized paper loop which I had cut by hand.

We immediately after this made a steel mould in which these loops could be cut quickly, and after a few experiments in the carbonization of them, in order to get their resistance as nearly as possible alike, we made a number of these filament lamps and used them at an exhibition in Mr Edison's house about the 2^d or 3^d of December 1879 -

Many of these paper lamps were used and a great many were run on life test some even running a year after this date

1907

239

See

to Dr Rice for treatment - I told him Emma had passed a very bad night - When I came home I found he had been and had installed a trained nurse - Emma's ear was to be douched every hour all night I got another room #6 to sleep in for which they charge me \$5 per night

12 Thurs New York Fine Taylor & Co all day
Dr Rice's this morning for treatment

13 Fri. New York Fine Taylor & Co all day.

Dr Rice for treatment

Preston Hiss called on me to have a talk about the Edison battery I told him I had no knowledge at all of it; all I know about it is from Magazines papers and by hearsay - He said he had assurances from W. K. of the Pen R.R. and others, that if he could put a battery on their trains that would run from N.Y. to Chicago and back without recharge they would put it on all fast expresses, failing that if they could supply a battery to run from N.Y. to Chicago and then recharge it hours and run back to N.Y. they would accept it. - Hiss says that if Edison will guarantee this he will permanently go in and work it up

Hiss has seen L.A.C. at the Laboratory during the last few days and has talked a great deal with him - He reports him as looking well but older - L.A.C. told him his battery was working satisfactorily on 300 delivery wagons for Tiffany, Altman, Gorham and others in N.Y. and advised him to get reports from them - The fault, he said, with the battery as it runs today was that it lost contact with repeated charging and that means increased resistance and loss of efficiency

I presume this means that with repeated chargings the oxide in the cell passes lighter on its enclosing case than when first made -

This defect Edison claims is now remedied in his latest output which will be on the market in 1908

He is looking old, I should judge him as 70, but he is very active and well preserved.

First Louisville Exposition Lighting - Mr. Hie told me that when he made the contract for lighting the Louisville Exposition in he had only been engaged by the Edison General Co. a couple of months - He had decided to take all the lighting he could get at \$5 per lamp for the 100 days of the Exposition - He went there and soon sent back a contract to sign - In it the Exposition Co. was to furnish all Allen Edison engine of 500 H.P. and autotransformers to run the dynamos the number of lamps (about 5000) was to be determined on when the experts came from New York - A few days later Moore and Sturges appeared and were frantically at the edge of the installation (the biggest installation ever attempted at this time was about 1000 lamps in a cotton mill).

On the ground after looking it all over Hie said to him: "Why the devil did you not take a contract to light the Mississippi?" He said, "I would have done if I could have found the other man," I knew nothing about this business except that you sent me here to get all the lighting I could get at a certain price, and now if you say I am cannot do it tell me and I will get out of it."

The people at the N.Y. office said, "He was ready to take it and Eaton the first suggested that he be asked to come away."

He came to New York and saw Edison, and much to his surprise found him elated and the only one who thought he had done a good thing - Edison decided immediately that it must be done and went at it with such a will that Sturges appeared in Louisville in about 3 weeks with the receipts for installing 5200 lamps.

Now was just the inside lighting and Hie said the Exposition Co. then gave the outside lighting to the Gas Light Companies.

Hie said he supposed he had done a brilliant thing but he found everybody in N.Y. opposed it and wanted to abandon it.

They however pulled it through and the Company got \$20,000 for the lighting and afterwards sold the machines to the permanent Gas Co.

Hie said that after it was all through he went to N.Y. and Eaton rose when he went into the office and took him by both hands and said he had done a big thing for the Co., then turning to Hastings the Secy. said, "Hastings make a check to him for \$2500," Hie said he kind of hesitated at first to take it as it was so small but after consulting with some of his friends down town he thought he would not refuse it as there might be more work to be done in the future - He thought it was particularly small after all the work he had done and his work had turned out so well.

His arrangement was \$100 per month and his expenses but that knew very well he expected more - After that he always insisted on 10% of the receipts of the Co. and got it.

Dec 14 Sat. New York Very wet and snow Did not go out
As I sat writing in 26 W. Lee Expt. came in with two gentlemen to show the room - One was R. L. Lister - quite a surprise for both of us
Dr. Rice is at 5 p.m.

15 Sun. New York Damp and a little rain
W. T. W. Joffrey called in afternoon - Emma better and I think we can dispense with nurse tomorrow

16 Mon. New York Fine Taylor & Co. all day. Dr. Rice in
At the Museum 9. 5 days at \$20⁰⁰ and gave up extra room
Columbia and Stella in today

17 Tues. New York Fine Taylor & Co. all day Dr. Rice in
Letter # at Mendelsohn Hall - Capt. Reed Amundson - He took West passage and the magnetic field

Feb.

of the Met. Sheet. Ky. Genl. Col. third gold 5.

9. Jan. N. Y. Fine (copy)

Oct. 950

To Dr. Forbush - Waked up slowly and had pain in left chest which extended up left throat when I breathed; more so when I walk against a cold wind - no pain in legs - He gave me pills in legs a long time and I held the pole a long time also vibrator - The theory was in that the state of the stomach for a long time has been bad, acidity or fermentation or gas forming, instead of proper digestion, this has impaired the circulation by leaving impurities in the blood making it more sluggish in the arteries.

He changed my medicine to be taken after meals - and kept on with the morning drink for the liver.

In all the walking I have done today I feel no pain in legs.

Geo. Kuesin - In to discuss the failure to pay coupons on the Bonds of St. Ky. Bonds of Kuesin Estate.

* Reminiscences of Edison #5: His Electrotypography -

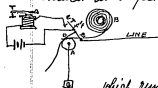
In the year 1875 whilst working out a system of rapid automatic telegraphy, Mr. Edison discovered a new principle on which he built an instrument to replace the relay in ordinary telegraphy and which could have been built up into a new system of telegraphy if there had been so much thing known as a magnet with its armature.

In the above mentioned system of rapid telegraphy a strip of chemically prepared paper was passed rapidly beneath a stylus of metal and received a mark from it each time a current of electricity was sent over the line, the result appeared as a blue mark on a yellow paper or a black mark on a white paper according to which stylus and which chemical was used

at the time - To find the best mark and the best paper, he made a great many experiments with a small apparatus that I made for him in which he could try any metal on any solution in a very short time.

His experiment worked as follows: a metal plate was fastened on the table and connected to one pole of a battery, the other pole being connected to a brass disc from whose edges radiated a stylus of every known metal - A piece of paper being saturated with a solution was then laid on the plate and one after another all the different metals were rubbed along the paper whilst the current was being constantly made and broken that passed through both - A paper moistened with persulfate of Potassium when put in contact with an iron stylus and the current passed through would receive a blue mark (permanent) on a yellow ground - Another moistened with iodide of Potassium and passed under a platinum stylus would receive a brownish or purple mark on a white paper (not permanent) In these two cases the stylus was connected to the pole that gives off O. - If the paper was moistened with Acetate of Potash (weak) and a stylus of Tellurium was used the paper would receive a dense black mark on pure white paper and in this case the stylus would be connected with the pole of the battery at which H. is given off.

Working with this apparatus Mr. Edison discovered that whenever the current passed through the friction of the stylus on the paper was diminished - This action was much more marked with some solutions than others and was exceedingly sensitive to very weak currents, so much so that he thought that messages could be received over a wire better and more rapidly than with a relay which is limited as to speed by the charge and discharge of the magnet.



He therefore designed and made an instrument making the moving parts exceedingly light to prevent inertia - A is a metal drum run by clock work over which runs a strip of moistened paper B and under a stylus D

that is hinged to an upright lever C. This lever moves between points at E and works a sounder in the usual manner - When current is passed over the line the stylus at D slips forward and makes contact at E and when the current is interrupted the spring F draws it back -

This proved to be a most remarkable instrument; the relay owing to its inability to charge and discharge its magnet quickly could never get up to more than 60 or 70 words a minute on long lines and then only with careful adjustment; but this worked at that speed so that very little adjustment was necessary and it has been worked up to 400 words a minute - This seems incredible when you think how many movements the little lever must make (about 10000 per min) but we proved it by making it repeat the message on the automatic telegraph from the original punched paper strip

多

connected to the H end of battery a densely black
mark would be shown (permanent) on a white
paper - With this apparatus we made many
hundreds of experiments and Ed. discovered
that whenever the current passed through, the friction
of the styles on the paper was diminished - This action
seemed to be much more marked with some
solutions than others and was exceedingly
sensitive to a very weak current - on which
he thought that an instrument could be made
that would receive messages after a course much quicker
than a relay which is limited to the time which is
required to charge and discharge a magnet -

He therefore designed the following instrument
(see patent) making the pivoting parts exceedingly
light to prevent inertia - This proved to be a most
remarkable instrument - The relay, owing to its

4

making it charge & discharge quickly could
never get up to more than 60 or 70 words a minute
on long lines and then only with careful adjustments
but this did ^{not} ~~not~~ ^{work at that time} so exactly that no adjustment was
necessary and it has been worked up to about 400
words a minute - This seems incredible when
you think how many wires the little lever has to make
& record 2200 words (about 10000) but we proved it
by making it repeat the message on the ^{shunt of paper of the} automatic
telegraph from the original punched paper strip

This was not of great need in telegraphy at the time as the operators could only receive 6 words a minute and there was only one company to sell it to the World which had bought out all competitors. A short time ^{the Union} ^{then} ^{after} ^{the} ^{War} a new company, appeared in the field and began to cut prices - The W. O. as it had done before raised up some absurd claims about owning the so called Page patent whereby it seems they

that is hinged from upright lever C - This lever moves between point at E & works a camber in the usual manner. When current is passed over the line the stylus at P lifts forward and makes contact at E & when the current is cut off the spring F draws it back.

16 100000 6250

241
60
32
50
50

They could prevent any one using an automatic telegraph with a retracting spring before a magnet. This might have put any telegraph equipment out of operation if it were by surprise. Some advantage toward securing the Jay Gould and Mr. Collins offered the Photograph relay magnet to the W. & A. L. Co but Mr. O'Brien informed him that he could not see his way to buy it. He then offered it to Mr. Gould for 100,000 and when there seemed to be a probability of this offer being accepted Mr. O'Brien sent for him and made a contract to pay 100,000 for it in 16 yearly payments of 6250 and they looked the instrument up and as far as I know it has never been used since for telegraph work.

78

W. M. P. Surin 149 W. 54 E. St.
 Dr. Brod and Lino have the times
 of Maratol not all as my wife
 expected

My wife and I all day 149
 not 3/4, look at her to see some
 machinery for sale

18 Dec. N. Y. My fine lot 149
 My wife is all day.
 Tell my wife today and my
 go to her and see how ordinary
 it was fine and dry with a wet
 band and fairly cold.

19 Dec. N. Y. Let's a new story
 which I have not heard Oct. 5
 hour all day. I did not go out

"6 Reminiscences of Edison"

Jim Kellings Tilden's Reminiscences of
 Edison from 1874-1878

Mr. Tilden of New York University
 who was a teacher, and one of the
 foremost educators in the field
 in 1874 it was very sad at that
 time a newspaper correspondent.

In regard to Edison, if a person
 has witnessed the "Lightning Bolt" and its performance is even for

EDISON'S SECRETARY A SUICIDE.

unexplained Act of John P. Randolph, Treasurer of Edison Companies.

QUONON, N. J., February 17.—John P. Randolph, who for the last fifteen years has been private secretary to Thomas A. Edison, and who was also treasurer of the various Edison companies, ended his life in the office of his home this morning. He went into the office about eight o'clock, taking with him a shotgun and a paper, which he had secured in the kitchen. He placed the stock-end of the gun against the wall, and the barrel pressed his body. He then used the paper to pull the trigger of the shotgun. The charge struck him in the heart, killing him almost instantly. The noise of the shot was heard by his wife, and she rushed into the office to find him lying on the floor of the cellar. She sent one of her three children for a doctor, but when he arrived he said the man was dead. News of the tragedy was soon communicated to Mr. Edison, and he rushed over to the house, and succeeded in raising Mrs. Randolph.

Mr. Randolph was forty-five years of age and lived with his wife and three children on Valley Way, in West Orange. He had been associated with Mr. Edison for the last fifteen years. Some time ago he was made treasurer of all of the Edison companies, and he held that position up to the time of his death. He left letters to his wife, Mr. Edison and Mrs. Edison, to William B. Gilmer, the general manager of the works, and to Peter Weber, superintendent. As far as can be learned there is no reason known for the man's act. Mr. Edison refused to say whether the dead man was in financial trouble, or to give out the contents of the letter to him.

Randolph passed yesterday in company with several relatives and friends, and with his own family, and appeared to be cheerful. No one noticed that he had anything on his mind.

Chief of Police Stanford of the West Orange police went to the house with two of his detectives and began an investigation. Thomas A. Edison, at his laboratory this afternoon, said that Randolph's accounts were perfectly correct. Mr. Edison's statement was confirmed by William B. Gilmer, general manager of Mr. Edison's business interests, and by Alphaeus Webster, general auditor of the National Phonograph Company.

Mr. Edison said that Randolph had been in his employ for thirty years. He started in as a boy when Mr. Edison required an experimental work at Menlo Park, and accompanied the inventor when he came to Orange. Randolph, said Mr. Edison, was not overworked, and had all the assistance he desired. Mr. Edison was of the opinion that his secretary's mind had become unbalanced. On Feb. 17, 1908

some idea of the manner
 in which this man in-
 vented— You made a
 suggestion and before
 you had explained what
 it would be, he says,
 "No, not it."

Now it is but covered
 with all sort of foreign
 matter, which is some
 kind of learning for-
 get— Now it is all, all
 he then says from the
 clips he has thus
 made a different inven-
 tion which he was
 not looking for.

Again
 Is the Record No 25
 149.

There is one matter
 in regard to Mr. Edison
 that Mr. Tilden would
 not state and that
 is his considered. He
 has now approached his
 position in his electric
 invention to feel that
 he is fully satisfied
 with his work.

TREASURER OF EDISON COMPANIES
KILLS HIMSELF IN CELLAR OF HOME

263



JOHN P. RANDOLPH.

John F. Randolph, Leaving a Letter Disposing of His Property,
 Tells Wife He Always Had Been Honest—Inventor
 Says His Employee Was Deranged.

John P. Randolph, treasurer of several of the Edison companies and private secretary to Thomas A. Edison, killed himself in the basement of the home in Valley Way, West Orange, yesterday morning.

After having had all his books carefully audited last night, he was found dead in the cellar of his home. He had left a letter to his wife, Mr. Edison and Mrs. Edison, to William B. Gilmer, the general manager of the works, and to Peter Weber, superintendent. As far as can be learned there is no reason known for the man's act. Mr. Edison refused to say whether the dead man was in financial trouble, or to give out the contents of the letter to him.

Randolph passed yesterday in company with several relatives and friends, and with his own family, and appeared to be cheerful. No one noticed that he had anything on his mind.

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Dr. H. B. Surin Aug 10, 1894
 31 Croft and Ellis have the initials
 of Charles and all on my notes
 Squibbed

Engels and Co. ad. d. 1894
 over 245 Jackson Ave. 2nd floor
 machinery for sale

18 Dec. N. Y. New York Oct 1895
 Master for all day.
 Tell my wife today and my
 legs bothered me less than ordinary.
 It was fine and dry with a wet
 wind and fairly cold.

19. Mrs. N. Y. Quite a snow storm
 about turned into heavy Oct 28
 rain all day. I did not go out

26 Reunions of Edison
 Jim Hillings Father's Opinion of
 Edison as an inventor in 1894
 Mr. Father of New York an inventor
 who was a chemist, and one of the
 foremost chemists in our country
 in 1894 it is always said at that
 time that a newspaper correspondent
 in regard to Edison, if a person
 has witnessed the 'Lightning' National's performance he can form

EDISON'S SECRETARY A SUICIDE.

Unexplained Act of John P. Handolph, Treasurer of Edison Companies.

Quincy, N. J., February 11.—John P. Handolph, who for the last fifteen years had been private secretary to Thomas A. Edison, and who was also treasurer of the various Edison companies, ended his life in the cellar of his home this morning. He went into the cellar about eight o'clock, talked with him a short while, and a pistol, which he had secured in the kitchen. He placed the stock-end of the gun against the wall, and the barrel pressed his body. He then fired the pistol to pull the trigger of the weapon. The charge struck him in the heart, killing him almost instantly. The cause of the act was heard by his wife, and she rushed into the cellar to find him lying on the floor of the cellar. She sent one of her three children for a doctor, but when he arrived he said the man was dead. News of the tragedy was soon communicated to Mr. Edison, and he rushed over to the house, and succeeded in calling Mrs. Handolph.

Mr. Handolph was forty-five years of age and lived with his wife and three children on Valley View, in West Orange. He had been associated with Mr. Edison for the last fifteen years. Some time ago he was made treasurer of all of the Edison companies, and he held that position up to the time of his death. He left letters to his wife, to Mr. Edison and Mrs. Edison, to William H. Gilmore, the general manager of the works, and to Peter Weber, superintendent. As far as can be learned there is no reason for the man's act. Mr. Edison refused to say whether the dead man was in financial trouble, or to give out the contents of the letter to him.

Handolph general secretary in company with several relatives and friends, and with his own family, and appeared to be cheerful. He was married and had a family.

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Mr. Edison said that Handolph had been in his employ for thirty years. He started in as a boy when Mr. Edison was engaged in experimental work at Menlo Park, and accompanied the inventor when he came to Orange. Handolph said Mr. Edison was Dr. Orange, and had all the assistance he desired. Mr. Edison was of the opinion that his secretary's mind had become unbalanced. *Feb 11, 1894*

TREASURER OF EDISON COMPANIES KILLS HIMSELF IN CELLAR OF HOME



WHOLESALE MURDER

DESCRIBES PLANS FOR WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

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WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

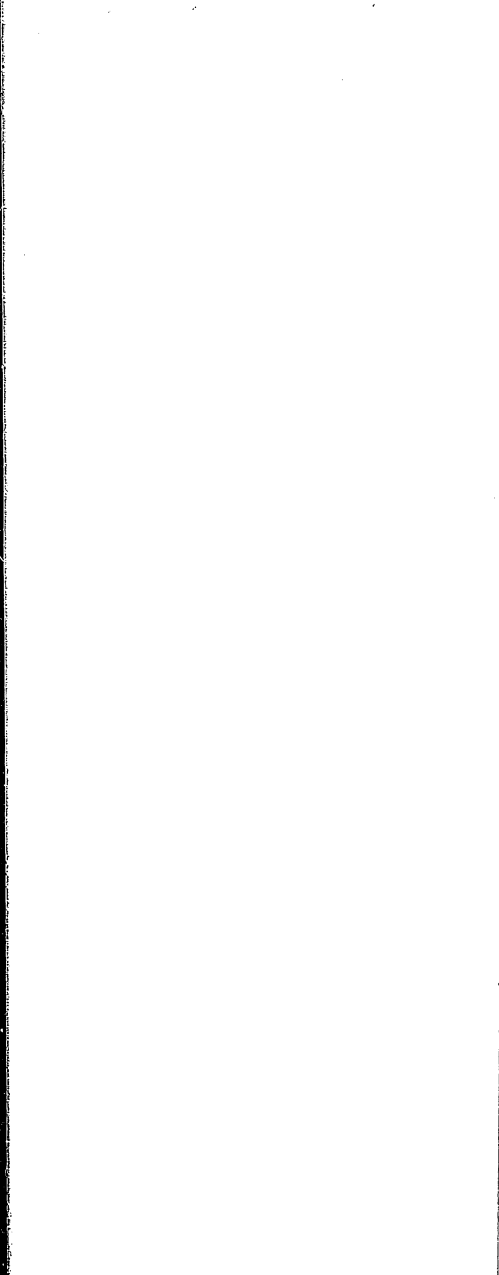
WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER

WHOLESALE MURDER



CHARLES BATCHELOR NOTEBOOKS, 1874-1909

The eighteen books in this set contain notes and drawings relating to experiments conducted by Batchelor, Edison, and others during the years 1874-1909. The two earliest books, covering the period June 1874-September 1878, deal with a wide range of topics including electric lighting, the electric pen, the phonograph, telegraphy, and telephony. Many of the entries on telegraphy and telephony pertain to Batchelor's own inventions. The remaining books are primarily concerned with electric lighting experiments during the years 1878-1886. Of particular importance is a shop order book (Cat. 1308) used in 1879 and 1880 to record experimental devices made in the machine shop at the Menlo Park laboratory. Four other books (Cat. 1301, 1302, 1303, 1235) contain a numbered set of electric light experiments. The first three books deal exclusively with lamp tests, while the fourth contains a wide range of electric light experiments and tests. A few notebooks also contain entries pertaining to ore milling and miscellaneous other technologies from the late 1880s through the first decade of the twentieth century.

All of the notebooks relating directly to work performed for Edison have been filmed, with the exception of one book from the 1890s recording routine ore assays for Edison's mining operations. Three other notebooks have not been filmed: two books from the early 1880s (not by Batchelor) containing tests of French storage batteries and comparisons of Edison's electric lighting system with other systems; and one personal notebook containing notes and experiments by Batchelor from 1889 through 1905.

The following books have been filmed:

1. Cat. 1307 (1874-1878)
2. Cat. 1317 (1875-1878)
3. Cat. 1308 (1878-1880)
4. Cat. 1304 (1878-1890a)
5. Cat. 1234 (1879-1895)
6. Cat. 1237 (1880-1884, 1894, 1899)
7. Cat. 1301 (1880-1882)
8. Cat. 1302 (1882)
9. Cat. 1303 (1882)
10. Cat. 1235 (1883-1909)
11. Cat. 1311 (1882-1883)
12. Cat. 1306 (1883-1884)
13. Cat. 1305 (1879-1886, 1891, 1897-1898, 1909)
14. Cat. 1381 (1882-1884, 1886-1893)

The following books have not been filmed:

1. Cat. 1236 (1883)
2. Cat. 1309 (1883?)
3. Cat. 1342 (1889-1905)
4. Cat. 1310 (1891-1900)

Charles Batchelor Notebook, Cat. 1307

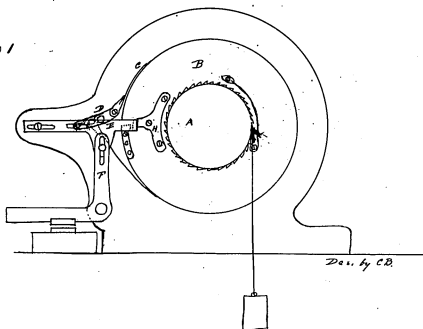
This notebook covers the period June 1874-February 1878. All of the entries are by Charles Batchelor. The notes and drawings relate to telegraphy, the telephone, the electric pen, the electromotograph, the typewriter, and various mechanical devices. Some of the entries pertain to Edison's inventions, but many also concern Batchelor's own ideas. Pages 29-41 and 43-44 contain impressions of plates, which may have been intended to accompany an 1874 manuscript by Edison and Batchelor on telegraphy. This material can also be found in Notebooks, Cat. 297 and Cat. 298 (*Thomas A. Edison Papers Microfilm Edition, Part I*, reel 5), and it has not been refilmed. The book contains 74 numbered pages and an index. Pages 1-40 were numbered by Batchelor. The remaining pages were numbered by an archivist.

Blank page not filmed: 25.

Index.

District No. 1, 2, 4, 5, 6, 10.

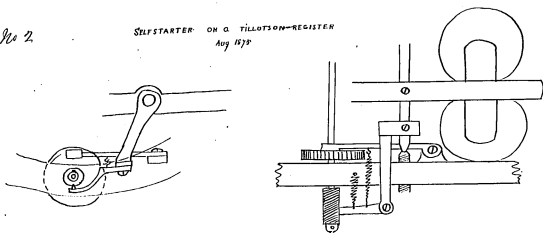
No 1



June 16th 1874 EDISON'S DOMESTIC TELEGRAPH RECEIVER.
 New Brake stop movement.

No 2.

SELFSTARTER ON G. TILLOTSON-REGISTER
 Aug 1878

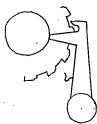


Break wheels & Cou

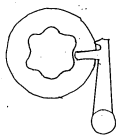
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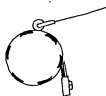
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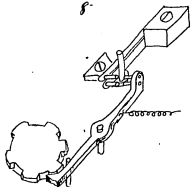
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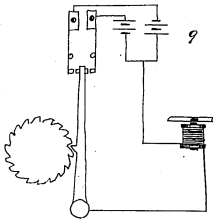
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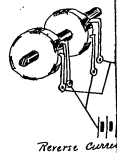


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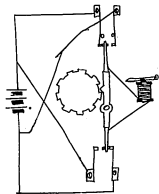
Reverse current 2 batteries

10



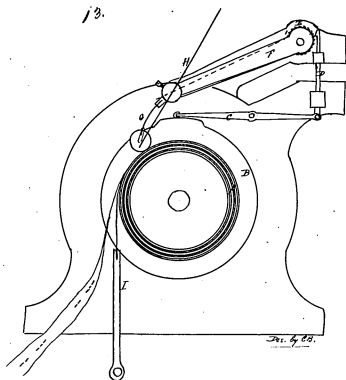
Reverse current

11



Reverse current 1 Battery

12

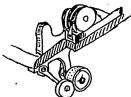


June 16th 1874

EDISON'S DOMESTIC TELEGRAPH RECEIVER.

For lifting movement =

14

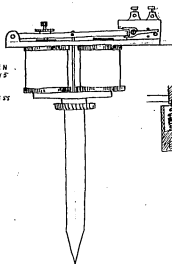


*Edison self-winding for winding message
of no set in records.*

PEN FOR AUTOGRAPHIC PRESS

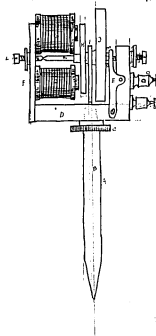
15

1875
Oct 13
BACHELOR'S PEN
Aug 13 1875
AUTOGRAPHIC PRESS

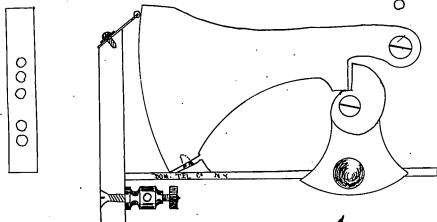
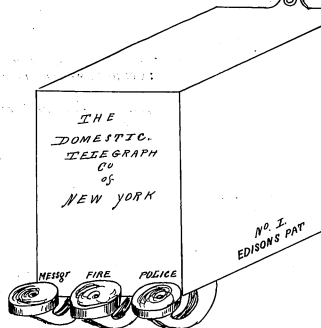
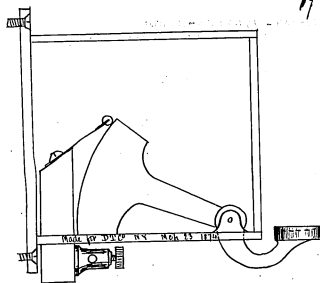


PEN FOR AUTOGRAPHIC PRESS

16



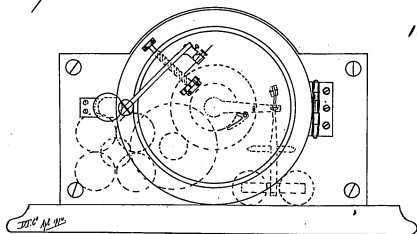
EDISON'S PEN
JULY 186 1870
1875
FOR
AUTOGRAPHIC PRESS.



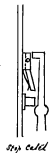
Type wheel
:VCBHFADMXRZK ELNTQWUF6JSY- 1987536-42801.

Escape wheel 20 teeth

April 10th 1874 Receiving Invt for Forensic Int. Co.
 Designed by ————

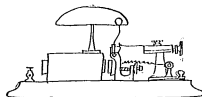
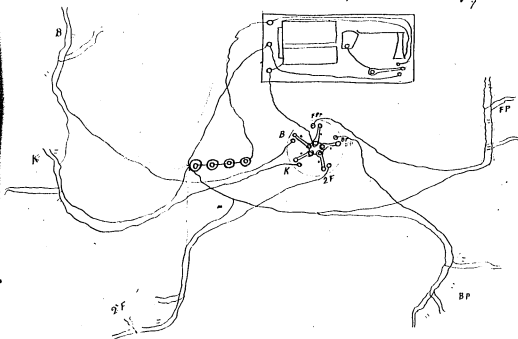


18



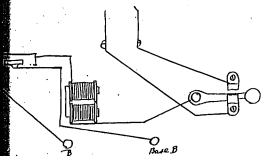
HOMES BURGLAR ALARM, FILED BY B. 3
 SEP 10 1874.

19



Dutton & Co.
Inventors
January 18th 1842

20



Tuning Forks.

21

7

Formula for calculating a fork to give any required number of vibrations per second

$$V_s = \frac{K e}{(l + 4)^2}$$

V_s - Vibrations

K - 818 240 (Constant of Steel)

e - Thickness of prong

l - length of bottom of curve

4 - $\frac{1}{4}$ in constant for base

All measurements in millimetres. To convert inches into millimetres (multiply by 25.4 (near enough))

Example:- Given fork 6" long & $\frac{3}{8}$ " thick to find the vibrations:-

$$\frac{3}{8} = \frac{K e}{(l + 4)^2} \quad \frac{3}{8} \times 25.4 = 9.525 \text{ in}$$

$$\frac{818 \ 240}{9.525}$$

$$\frac{409 \ 1350}{1636540}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{25.4}{6}$$

$$\frac{152.4}{4.0 \text{ constant}}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156.4}{156.4}$$

$$\frac{156}{156}$$

$$\frac{936}{936}$$

$$\frac{156}{156}$$

$$\frac{24336}{24336}$$

$$24336 \overline{) 7794021.750} \quad 320.2 \text{ vibrations}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

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$$\frac{409 \ 1350}{409 \ 1350}$$

$$\frac{409 \ 1350}{409 \ 1350}$$

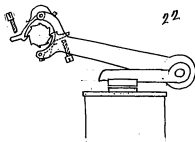
$$V_s = \frac{K e}{(l + 4)^2} = \frac{818 \ 240 \times \frac{3}{8}}{(6 + 4)^2} = \frac{818 \ 240 \times 9.525}{(152.4 + 4)^2}$$

$$= \frac{818 \ 240 \times 9.525}{(156.4)^2} = \frac{779 \ 4021.75}{24 \ 336} = \frac{320.2 \text{ vibrations}}{\text{per second}}$$

Spice method.

JULY 11th 1874
Finished

8
EDISON'S NEW UNIVERSAL PRIVATE LINE
PRINTER



New Escapement.

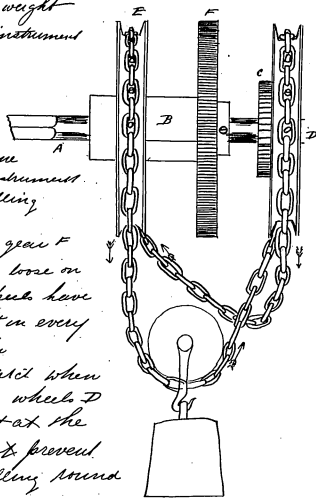
Sep 3 1894 9

A method of winding a weight
up without stopping the instrument
that it drives

A is a shaft on which
the wheel D is firmly fixed
& the ratchet C also.

A pawl is fixed on the frame
of any suitable part of instrument
to prevent the weight pulling
round the wheel D.

B is the hub of the large gear F
& chain wheel E & runs loose on
shaft A. The chain wheels have
pins in the groove to fit in every
other link in the chain
As may be seen from sketch when
A is turned & weight the wheels D
lifts up the weight but at the
same time does not prevent
the weight from falling round
E.

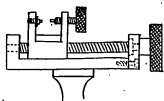


23

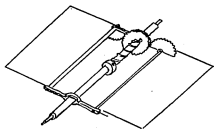
24

Sep. 6, 1874

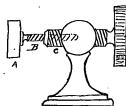
Good adjustment for
Polarized Relay.



25

Sep 6 1874
Expanding Fan.

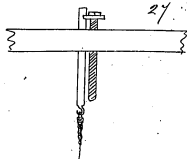
26



Adjustment for a Relay etc.

A. A component
B. Left hand screw
C. Right hand screw.

27

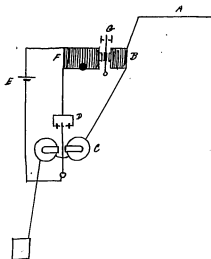


Adjustment

Sep 5th 1874

11

28



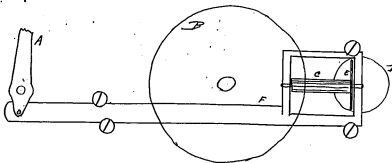
Method of reversing a current through a relay without opening the points.

A is line passing through B & C to ground.

C is polarized magnet which whether the line is charged or not, closes the local circuit for magnet F which acts as a spring for armature.

A positive current now comes over at A drawing armature to magnet B, & also over to C. Reverse it & the polarized magnet works quicker than the ordinary open local & prevents F from pulling armature.

29



Speed Regulator for clockwork.

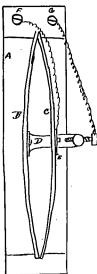
B is a crown wheel on the end of the shaft & turns in the pinion C on wheel is disc E. Disk E rolls on D disc which is fastened to fan shape.

Whole carriage F is moveable. & when moved to the left so that disc E is nearer the edge of D it allows the pinion C to move quicker.

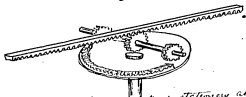
Dec. 6th 1874

Hard Rubber Thermostat.

About Nov 8th Edison suggested to me that as Hard Rubber had such great expansive properties we should make a thermostat of it & try it. Made me the drawing & it worked well.

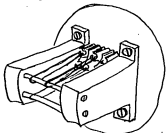


31



A reciprocating motion from a rotating stationary at each end
Sept 19 1875 got it from Wyke's Speed Gauge

32.

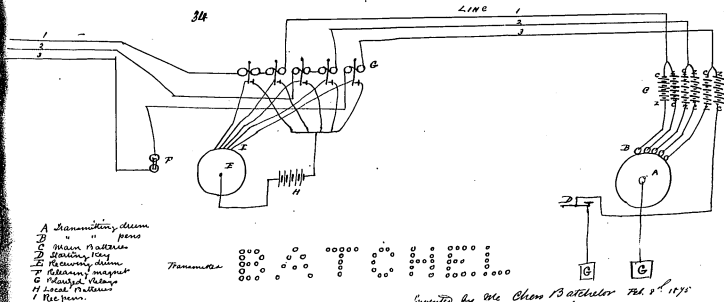


New arrangement for drawing back the
bar in I Refractor put on Feb. 5th 1875
7 adopted in future

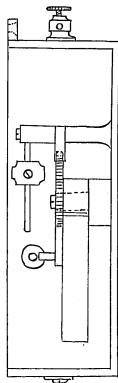
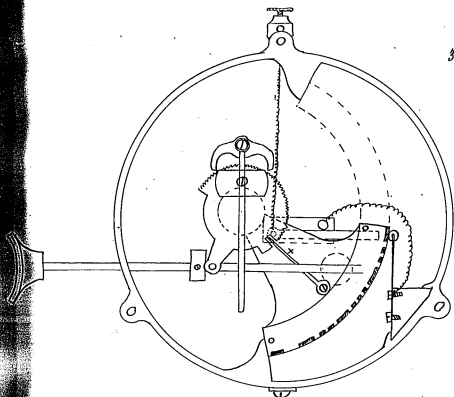
33.

*Batchelor's device & gold quotation printed
Feb 8th 1878*

13



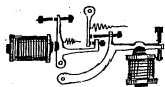
*Principle
of Morse.*



Box for Domestic Telegraph Co NY Designed by Chas. Batchelor Nov. 22nd 1874
 It matters not how hard or soft the person pushes in the button the signal will always
 be sent at the same speed. The return mechanism is not "let go" until the arm is on the
 down stroke so that a message from 349 would be received thus: — — — — —. The first long dash
 counting as nothing, the escapement & ball prevents the arm from coming down too quick & the spring X prevents
 the dots from being cut up by the jar of the lever.

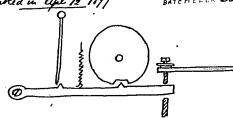
-Drawn Jan 24 1878
 NEW STOP FOR DOMESTIC RECORDER
 Invented in April 12 1877
 BACHELOR BACHELOR

36

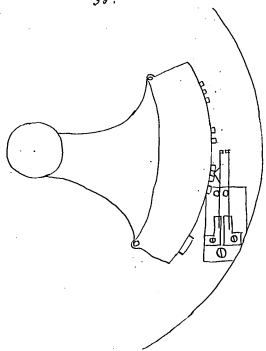


Genit Smith's recorder

37



38.

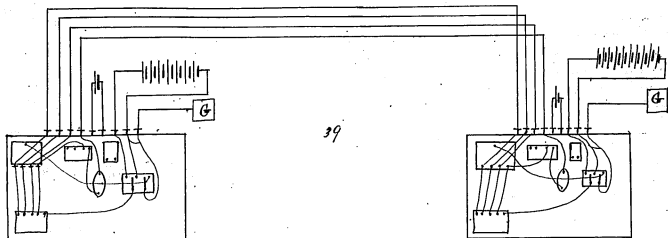


April 28th 1878
 Made new box on the principle
 for Domestic 221 Co. & it works
 just rate better than any other
 also much cheaper.

C Bachelor
 Written May 1st

Roman Letter on 4-wires

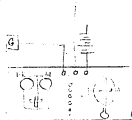
16

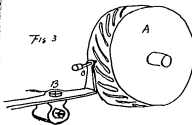
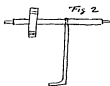
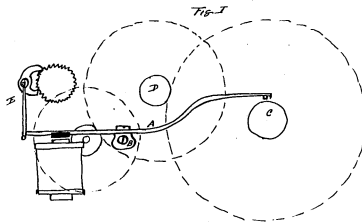


Successfully worked between New York + Philadelphia
by T A Edison & E. B. Bracheler Sunday Jan 31st 1875

DUPLEX TO PREVENT ANYONE
TAPPING JAYGOULDS LINE
EDISON JULY 1st 1875

40

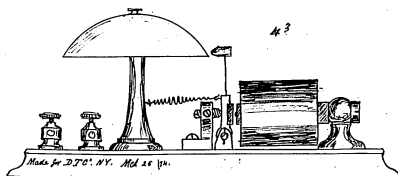
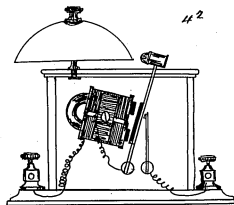




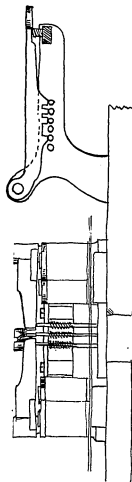
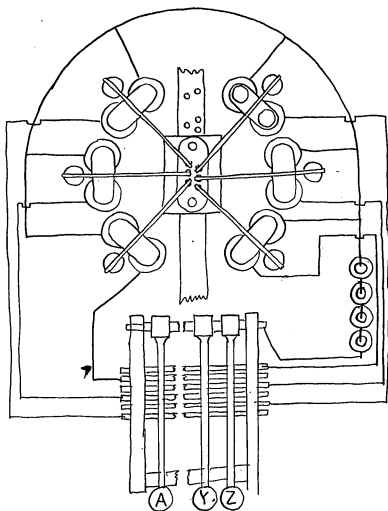
In my Stock Printer, the releasing of the instrument in a circuit being performed by a magnet in each instrument, worked by a negative current on the 3^d wire if the 3^d wire should become detached or be broken the instrument would run all the paper out in order to prevent this the release lever A is put on a slip B which moves sideways & round on its axis, when the line is open the lever A falls on to a hook C which can be on the shaft shown or at D where it would stop the inst. quicker as C turns round it moves A sideways till it touches Rod E another view of Rod E is shown in Fig. 2.

Another way of preventing this is shown in Fig. 3 a wheel A is fixed on the slow shaft & has spiral grooves in the periphery in which the stylus C can drop when the magnet is open. When stylus would run out 50 or 100 words length of paper & then stop & when the magnet is closed it springs back to the normal position. When the instrument is in good order & working the release magnet must be closed every 50 or 100 words as the case may be.

Chas. Batchelor



T A EDISON
Perforators for Automatic Telegraphs
141 775
Patented August 12, 1873

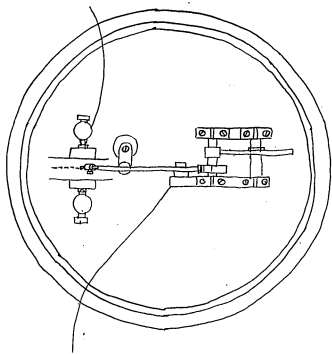
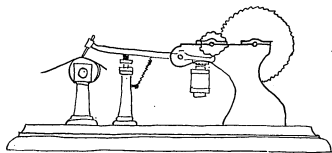


45

T. A. Edison

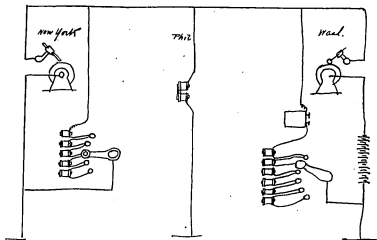
Rec Inets for Chemical Tel.

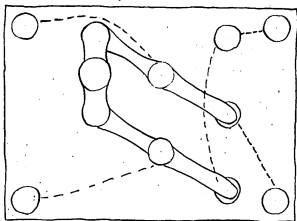
No 150,847 May 12 1874



Sketch.T A EDISON
Chemical Telegraphs

147 313

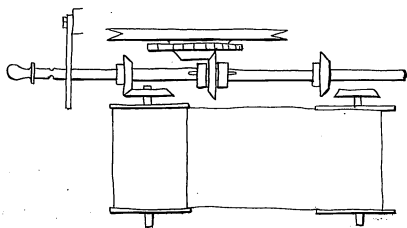
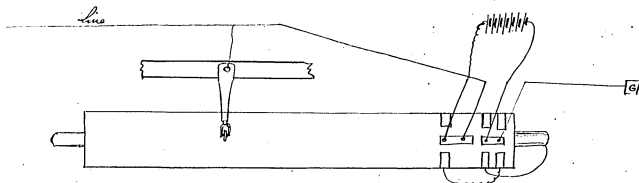
Feb 10 1874
Jan 29 1873 filed46

Current Routes

47.

Reversing arrangement for
Horse character Private line printer
April 17th 1870

23



Rubber moving mechanism
of
Shole & Glidden type writer

Practical Solutions for Chemical Telegraphy

24

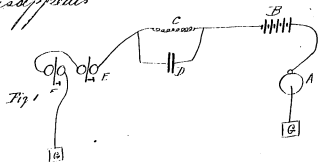
Hypogallic Acid & Common Salt (M. Ché).

Very good for short circuit it does not come out instantaneously but gets darker with time. Hypogallic Acid being acted upon by light it is necessary to put in enough salt in to compensate for as much as possible. The paper however will always be a little discolored. It is a brown mark on an almost white paper. I decided on this solution to run my Stock printer April 3rd 1875

Chas. B. Atchelor April 11th 1875

April 10th 1875 Atchelor's Printer

I find in working my printer that dots frequently drop out which is due to the induction of the relays in circuit so short a circuit. I can obviate this by increasing the resistance of the line & battery power so as to get the same amount of induction, the bad effect of which is not felt so much in a long distance. If now we shunt the resistance with a condenser the fault entirely disappears owing to the



Description of Edison's Not & deed
Private line printer.

April 17th 1875

26

The object of the invention was to supply an cheap, reliable instrument for private lines, free having type wheels, being exceedingly dear & complicated. It works without switches is always ready to receive & is always on open circuit.

It records on chemically prepared paper.

The instrument consists of a clockwork A a transmitting roller B composed of brass washers with the Morse characters cut on the periphery the contact springs H a keyboard C a reversing arrangement D a release E which

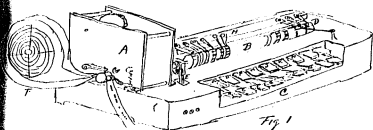
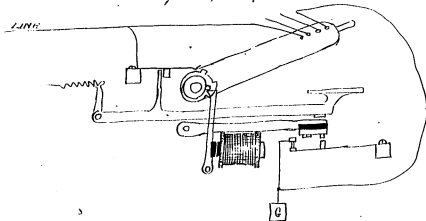


Fig 1

is powered by a magnet under the base, a paper reel F enclosed in an iron box in order to keep the paper moist, a receiving drum G in which rest a styles of Etilleum.

Fig 2 shows the principle of the construction



April 27th 1845

Platina Solution

27

Water 1 Liter
Pyrogallac Acid 3 drwt
Nitrate Strontia 17 drwt
Salt 6 gr.
Platina pen on H

Very good solution & permanent use
on my pen & it is O.K.

Johnson tried it last night & Phil & Wash.
& got writing as fast as he could turn

C B

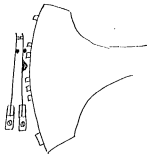
April 30th 1845

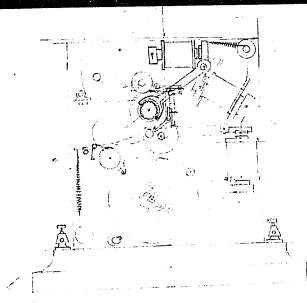
Copying Experiments

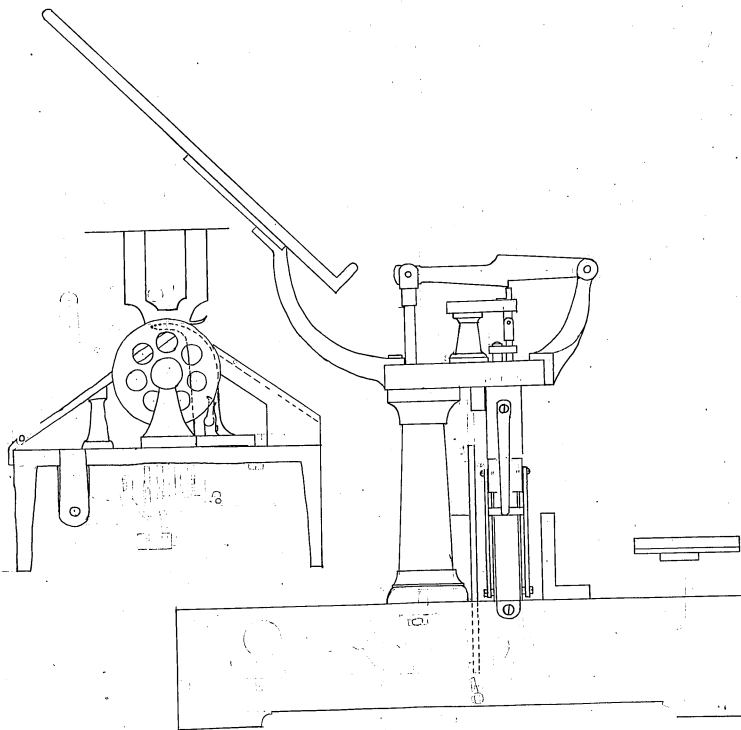
Aniline streaks blue with Chromic Acid tried to copy
with it but with no success. Lacquered a platina plate
11x70 in it with a strong sol. of Camphor, which dissolved
shellac & washed off. Could then take a great many copies
with battery & sensitive paper but they are wrong side about.

May 1st 1845

Roman letter receiver started running a Laboratory
New style Document has taken by Brown, Spring
& platina points, mixed of
rollers. a good thing.

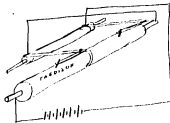






Sunday May 2 1845

Made machine with one pen like drawing. A long drum split in halves & insulated from each other. 2 Pens sliding together on an insulated rod, 1 on each drum. wrote with insulating ink on 1 drum & put sensitive paper on the other & moved the pens back & forth & forward quickly over them. The result was pretty good.



Tried it & got some coffee off Dry-gal sol. also Prussian blue paper & is whitened by the current but the latter was not sensitive.

Took 100 Sample of static charge at 10 words per minute over the cable by shifting the condensers.

Tried (Alcohol + Nbs) Sulphuric Acid + Carb Soda for a new fire. No go.

May 3rd 1845

New Solution for Plat. pen

Pyrogallic Acid

Hydro Acid in excess

Nitrate of Ammonia in excess

Yellow marks on O turns reddish

Started our new Synchronous 1 wire instrument & worked all night on them. They gave readable messages from the first & worked fine. Did not try them for perfect synchronism as they gave us good copies without adjustment. Surely such would be all right for blotting. But we cannot blot if they are useless until we can find some method of erasing

1890

The extra dot. Tellurium would do as it can be blotted out
by hydrosulphate of soda. but its difficulty to cast & work is
quite a drawback.

May 5th

Worked all night on wire, found that B_2 + Phosphoric
acid blot the paper marks.

May 6th

Tartaric Acid added + Paper not make it white &

May 6th

Got a marks from silver on the delicate, fugitive,
I had instantly takes all coloring matter out & seems to
pale it.
Oxalic acid + not common good but fugitive

May 7th

Worked all night
Fixed up electrograph up as at first had to go at
5 AM (Baby sick) but Edison & I got 200 words per minute

May 8th

Murray got. Key of Domestic put Brown in there in
charge for them.
Alfred. Little a domestic Box

May 13 1875 worked all night

Repeated through Electromagnet 800 words per minute perfect. Still
find difficulty with it sometimes works & sometimes not
Made some blue & crimson fire.

May 13 1875 New York W. Clark & Son

" 16 " Agreement verbal between Edison & Murray Murray taken
by room & half past floor & to cellar.

May 17 Moved machinery & 10th

May 26 Wednesday Domestic started & took about 13

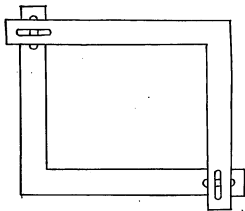
27 Allen came at night & offered Edison 3 pages of matter if he
would take Scientific part of Opus 10

Made Domestic Bill & June 1st 1875 21

May 29 Murray first surprise

Called down & saw desk in office

4 26 May printer set



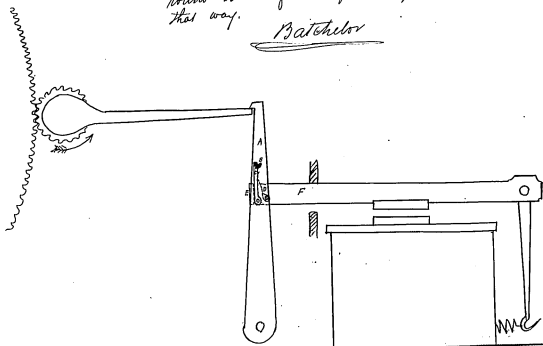
Aug 8. 1845

Frame for letter on new copying press
must be made like this so that it
will give a little after the paper
gets wet needles put in frame
to put paper on instead of gumming
Batchelor

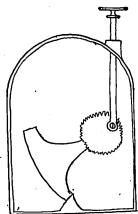
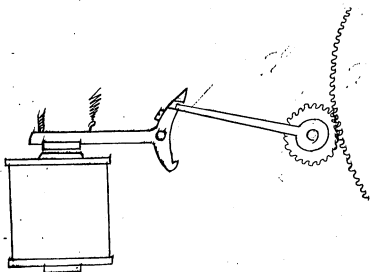
Aug 4th 1845

Release movement for dm. going stroke
when armature closes pawl & pushes clock away
by cam is opened & a bit & return before the
magnet opens when the magnet opens pawl & goes
round back of B as flexible spring allow it to give
this way.

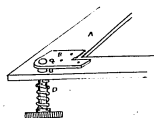
Batchelor



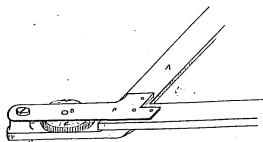
Aug 20th 1878
 Step 4 let off for Bell stroke
 a Batchelor



Sept 3rd 1878
 New movement
 for signalling on
 Domestic tel co.
 Amos (and) Batchelor
 Sept 3rd Chas Batchelor



Sept 3 . 1878
 New clip for paper on
 new piece.
 Chas Batchelor
 A paper frame
 B clip with 2 pins
 C screw hole
 D screw hole with
 spring
 Patn Aug 12 1878



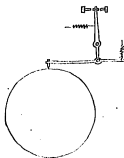
Sept 3 1878
 Paper clip adaptation for new piece for indicator
 A Pin to use
 B Spring ball pen in
 C Wheel with screw on
 but wheel act on pen D coupling of
 Patn Aug 13.
 Chas Batchelor



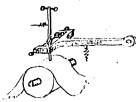
Sept 3 1878
 New way of arranging
 part a both tel & Amos
 A Segment
 B Thin brass plate fast
 on with 2 screws
 C Removable pin with
 spring
 D Contact point
 Chas Batchelor

Sketch July 29

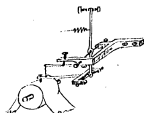
ELECTROMOTOGRAPH MOTIONS



Aug 12 1878
J A BROWN



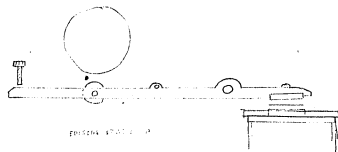
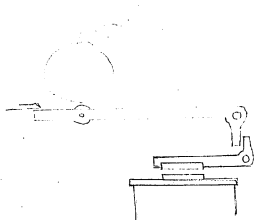
Aug 13 1878
C H BROWN

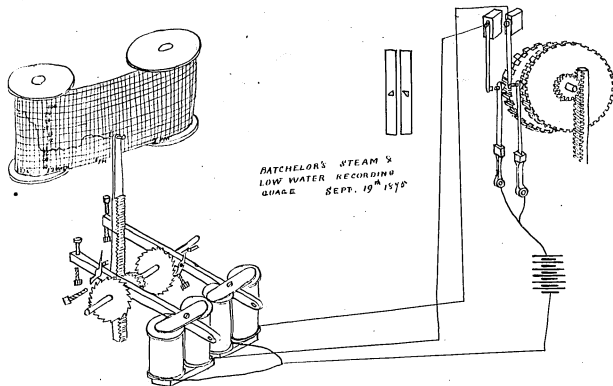


Aug 13 1878
P A BROWN

PRINTING LEVERS.

57

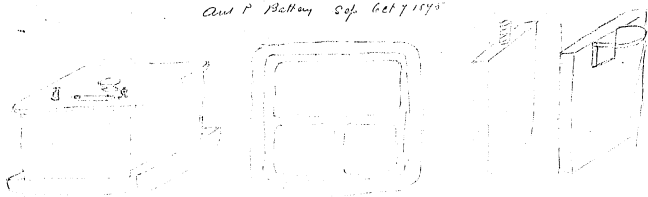


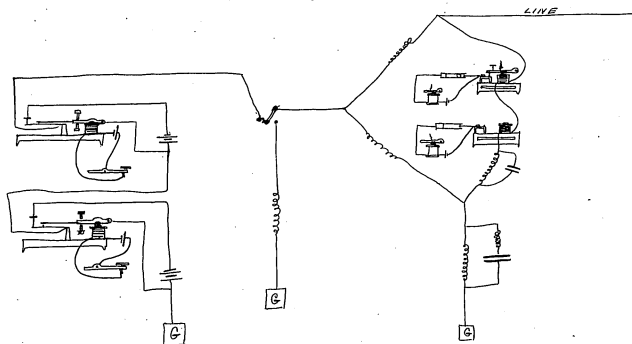


USES FOR THIS INSTRUMENT

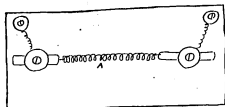
- 1 Recording Stream gauge
- 2 " High & Low water gauge in lake
- 3 Rise & fall of the lake (recording)
- 4 Rise & fall of supply reservoir (recording)

And P Battery Sep 6th 1873





Edison's Telephone Circuit Nov 13 1875

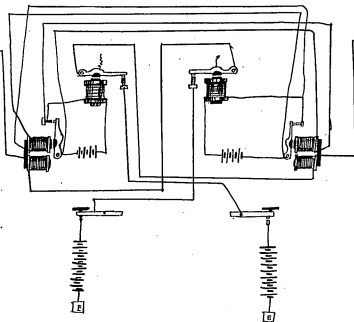


A German telegraph Nov 17 1875

Acoustic telegraphy. Nov 15th 1875
 Edison's idea. the jar of tuning fork
 would make German sides spring &
 shake apart & give greater resistance
 & work on the difference
Patchley

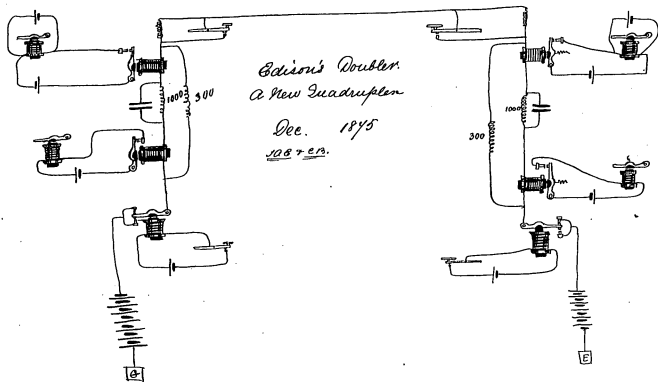
WEST

EAST



Edison's Automatic Repeater
 Working but key sounders +
 relay needed
 C. H. Schuler

Nov 18th 1876 Filed by Johnson

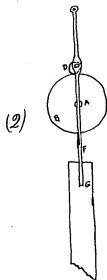
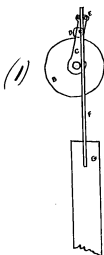


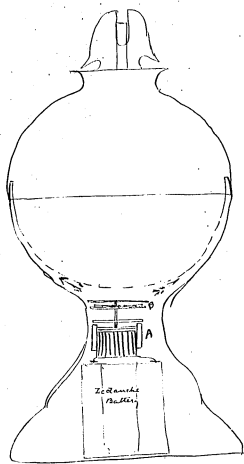
Electrical Sewing Machine

October 16th 1946

Driving apparatus.

- (1) A motor shaft on which
is large flywheel
B smooth face wheel on
which eccentric D binds
driving it round
E Driving pins for spring
F which is fastened to
fork G, having large
amplitude & about
85 vibrations



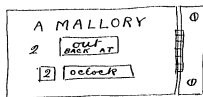
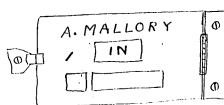


Lamp to burn
without chimney. Oxygen to
be supplied by electric engine
& Helmholtz battery in bottom of
stand. Engine A drives fan B sending
currents of air round as indicated by
arrows + battery directly on burner

Nov. 13th 1876
Chas. Satchell.



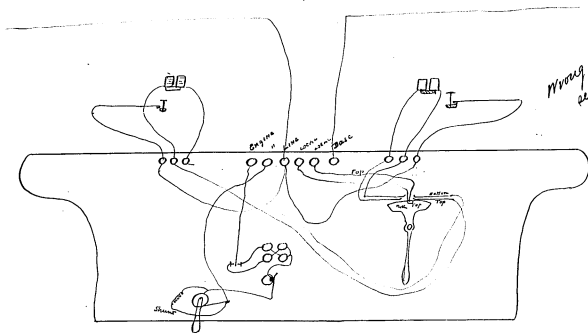
Office Door attachment



- 5
- In the plate shut against door showing card IN & all others blank these cards Fig 3 slide between two lugs on the plate the figures being given by the same arrangement as the figures being given by the same arrangement as in fig 4 When the plate is shut to the door it engages with a clasp & Fig 2 shows it moved. These could be got up in good style and put on office doors for about 50 cts. each

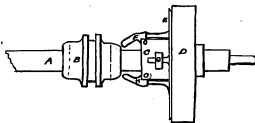
Wm. H. Hart Nov 11, 1876

Chas. B. Atchelor.

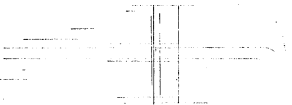
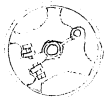


Connections for Edison's Embossing Translator
now Making (for use) at J. S. Murray, Newark, Apr 3rd 1877
Bachelor,

*Fraction Clutch, used on
Ratt & Whitney self feed screw
machine.
April 13th 1877.*



- A Shaft
- B Slipped cone on shaft, on keyway.
- C Large collar fast on shaft
- D Pulley
- E Cone on inside of Pulley
- F V H Cam Boss.
- G Guide for Cone.



N^o.

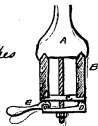
Seen on Small & Whiting
Screw Machine

Rod Clamp for Screw Machines.



N^o 2

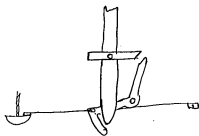
as used on Pons hand lathe



Hand Rest Clamp.

- A Lathe head or hand rest
- B Lathe bed
- C Guide plate
- D Clamp plate
- E Cam for D

Embossing Telegraph



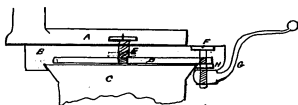
June 24th 1844
Chas. A. B. & Co.

Movement for Embossing,
point and translating
point occupying the same
place on plate

N^o

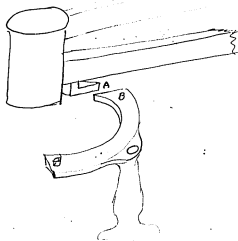
Hand Rest Clamp.

As used on Washburn
Hand Lathes.



- A Rest body
- B Lathe bed
- C Clamp plate
- D Screw in D and slides in A
- E Nut in D and slides in A
- F Clamping screw, forced in D and C
- G Clamping handle
- H Rivetted washer

Edison's Embossing telegraph



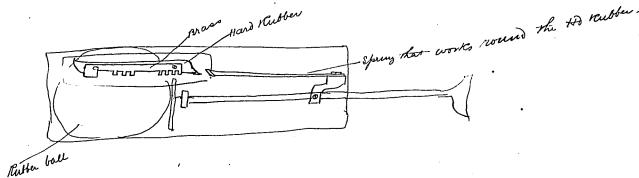
Sat. March 31st 1877

Chas. B. Chetron

When the arm has got to the end of spiral on plate the lug^A in bottom swing arm strikes plate B and will not pass until lowered to right distance. The arms cannot be put together again until it comes back on to spiral

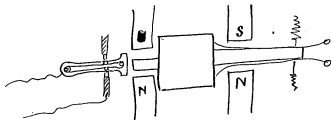
Unmunciator (Hole)

June 18th 1844
Chas Batchelor

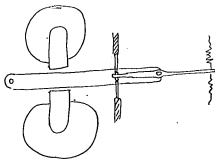
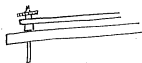


Brown & Allan's Relay
Telegraphic Journal
May 15 1874

June 18th 1874
Chas. Batchelor



The arrangement is to procure the
make or break instantly on the
slightest rise or fall of the
working current in cables etc.



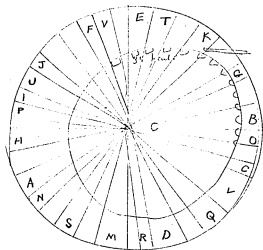
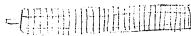
Edison's Embossing Translating telegraph
— Continuous roll for press work.

July 4th 1877
Chas. Pratt

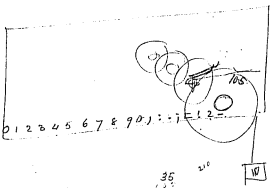
Cypher Machine

Nov. 24 1897
Chas. Satchell.

66

[illegible][illegible]

1131211 113121211 11211211 11111111 26
1111111111

$$\begin{array}{r} 26 \\ 10 \\ \hline 9 \\ 35 \end{array}$$


ABC DEFGHIJKLMNOPQRSTUVWXYZ 012345678901:~12

35

230

10

306

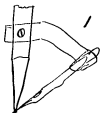
264
145

APM



Duplicating press

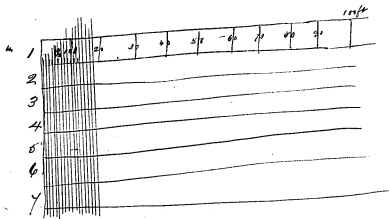
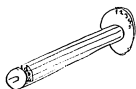
Method of making ordinary writing attachment to write as
well as puncture



What I want, when I go to N.Y.
To see about Kester Bros
Sled, Dishie & Doll Heads
~~Bedstead~~ Bedstead
Work Baskets
Something for Jennie & Annie.
Something for Katie Head & P. Book
Something for Aunt Eliza
Something for the Christmas Eve
Darning Needle

Lunter Measuring machine

Dec 13th 1944
Chas. Katchen

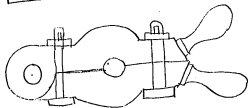
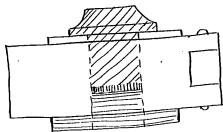
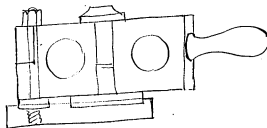
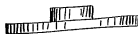
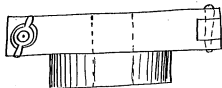
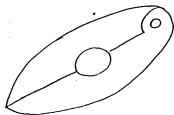


16
 9,800
 517

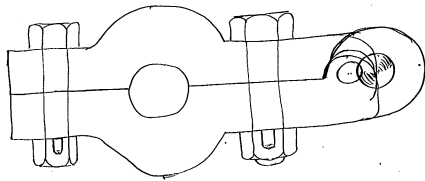
Mould for Plumbago Pluffs for Telephone

Jan 9th 1898.

Chas. Batchelor

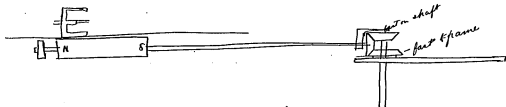


Made this way



Velocipede Toy

Charles Batchelor Jan 31st 1878



Magnet revolves round
and wheel follows it.

Speaking Telephone

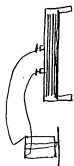
Chas. Batchelor Feb. 4 1895.

72

I conceive the idea that we can vary the resistance of the battery itself in making a telephone and this can be done with a high resistance one made of thin sheets of metal and a diaphragm to press it so as to give less resistance or it may be done with a very low resistance battery.

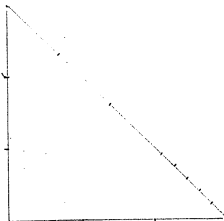
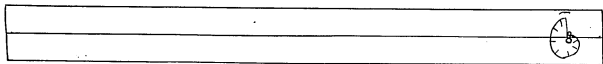
The preliminary experiments to try would be to find out whether by pressure you can alter the resistance of a battery made up like a voltaic pile.

It may be received on a magnet or a condenser.



It may be that the diaphragm may by ~~making~~ ^{making} the pole larger

Copper pole or part of it and as you talk it makes the pole larger in surface & consequently alters resistance



WIRE - 1/16"



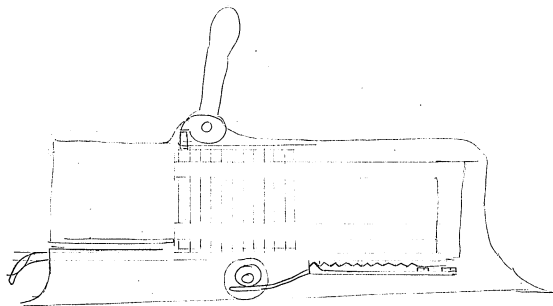
Nothing
Quadrant
Quadrant
Quadrant
Quadrant
Quadrant



Check punching Machine

Feb 16th 1945

74 94



462

1-2004-0000



462.83

Charles Batchelor Notebook, Cat. 1317

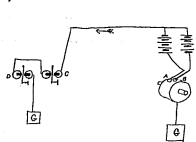
This notebook covers the period October 1875-September 1878. All of the entries are by Charles Batchelor. The name of his wife, Rosanna Batchelor, appears occasionally as a witness. The notes and drawings relate to telegraphy, etheric force, the telephone, the phonograph, the tasimeter, the electric pen, and the electric light. Most of the entries pertain to Edison's experiments, but some concern Batchelor's own ideas. The book contains 72 numbered pages.

Blank pages not filmed: 9, 72.

Missing page numbers: 1-8.

(1) Quotation Printer

In working my printer I find considerable difficulty in dots dropping out & occasional sticking of the contact points. I think that the induced current having

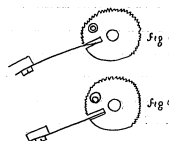


so small a route cuts the signal off now. A & B are two roller pens which connect alternately with the drum through holes in the paper putting first a positive & then a negative pole to line

each of which currents move a separate polarized relay C or D. Suppose A works C & B D, now if B is sending a current the lever of D is drawn over, but the current also goes through C & directly B is out of the hole A is in & the counter currents from the magnets after the charge of B cuts off to a certain extent the charge of A. By putting 30 ohms resistance in each line or as you may say increasing the route for the induction current I was enabled to almost entirely obviate this. I worked it for several days & then left it for 12 days, I then started it up but it dropped dots & worked badly, altered the adjustment but no better altered battery as I thought that there was a possibility that it was not strong enough to go through 20 ohms & 30 ohms & overcome the permanent magnetism in the relays, but with no better result. I now find that the tongues were clogged up & one of the magnet wires was touching the wire & I sent it upstairs to clean. I use paper wetted with Pyrogallie Acid, Nitrate of Strontia & Salt & boil the solution after it is made in order to prevent black spots which occur in the paper when this precaution is not taken. I decompose with the pens connected to the zinc of the battery & when the battery is very strong there is a dark red substance forms between the platinum points connecting them together & spoiling the letters
 Oct 26th 1895
 Chas. Batchelor
 Ross Batchelor

(2) Domestic Telegraphy

I find that the setting of the flat spring on the segment of the Domestic signal box has a great deal to do with plain & even signalling. when the segment is going up the



spring pin ought to be as in fig 1 when it is coming down it ought to be as in fig 2. It ought to be perfect - 4 yree at all times & not cranked sideways or so large as to fill the slot in the wheel. I find it good to make the springs in fig 3 not

a little stronger. & not very weak but flexible. The teeth on the brass segment also must be made round on top to prevent any possibility of it sticking
 Oct 20th 11 AM 1895
 Chas Batchelor
 Ross Batchelor

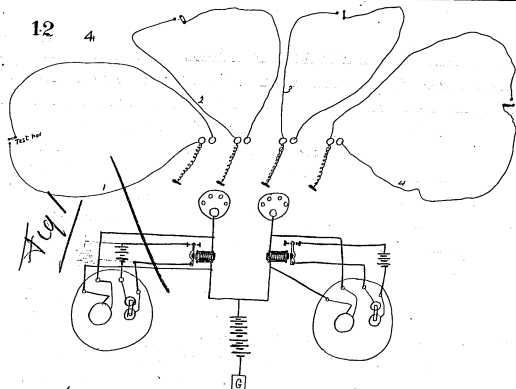


3 Domestic Telegraphy

I noticed a black oxide formed directly underneath the pen on the recorder & when the drum was cleaned with emery paper I found the nickel was off that particular spot. It seems to me that the nickel had either oxidized or combined with something in the paper. The solution was Pyrogallie Acid, Strontium Nitrate & Salt. Pen was Platinum. Drum brass nickel plated.

The small teeth in brass segment of signal box I make round on top to further prevent the segment sticking at any point

Oct 28th 12 noon 1895
 Chas Batchelor
 Ross Batchelor



My design for working four circuits with two recorders on the Domestic telegraph Co. plan for Newark N.J.
Sunday Oct. 31st 1898

Chas. Gatchelor
Tom. Gatchelor

5 Turning Felt Rollers.

On our autographic Press we have a roller six inches long which is made up of washers of felt cut from old hats; these washers are $\frac{1}{2}$ inches in diameter. I have tried different ways of turning & grinding these rollers to make them true; the best as yet being to run the roller about



Fig 2

revolutions in the lathe then with a sliding tool made like Fig 1 + 2 run quickly across taking a moderate cut & then back again without altering the tool, then with a piece of coarse sand paper fattened to a straight flat piece of wood smooth off the top. The washers are sewed together so tight that you can just make a dent with your finger. If there are hard washers amongst the soft ones the hard ones after turning will always be lower than the soft ones but this in a great measure is remedied by the sand paper.

I tried grinding them off in the same manner that we grind off hardened steel mandrels in the lathe with an apparatus like Fig 3. As the roller is the lathe running slow. 9B is an emery wheel running very fast in the same direction & fastened to the tool post of lathe so that runs along the roller. Our wheels were not coarse enough they glazed directly & only seemed to lay down the fuzz. I think if we had a very coarse wheel it would do it as the sand paper smoothes them off so well. I tried running it off but this takes too long to bring them up true.

Nov. 2nd 1898 7 p.m.

Chas. Gatchelor
Tom. Gatchelor

6

Celluloid.

Took an acid for peroxidizing the paper composed of:-

24 SO₃
6 NO₅
4 H₂O.

I let it cool down to 140° F.

We now took brown tissue paper & cut it in strips & put in a flat dish in which there was a small quantity of acid & with two glass rods kept turning it & letting the air get into it until it was all wet, we then threw it in a large quantity of water & stirred violently at first to prevent heating & washed almost all the acid out & then neutralized with NH₄, washed again & left to dry Sample No 1.

Our Sample No 2 was worked from the same paper & acid but instead of dipping the paper in the acid we made an apparatus for throwing the acid on the paper in fine spray. In turning over the paper stuck together very much & it appeared after washing as if it was carbonized inside & not out. No 3 We worked a lot of wood paper in the same manner as No 1, & No 4 We worked a lot of Oiled

tissue paper same as No 1, 5 was a lot of waste worked same as No 1, 6 was a lot of Stardust that had been previously boiled in KO & dried which we put through the same process as No 1, None of the above 6 were soluble under the ordinary conditions but for No 1 we found the following solvents:

- Alcohol & Camphor with heat
- " " Oil of Wintergreen with heat
- " " Acetone
- " " Oil of Myrsbane & Spence with heat
- " " Iodide of Ammonium cold.
- " " Zinc chloride with heat
- " " Sulfocyanide of Potash partial with heat
- " " Iodide of Sodium with heat

Nov 5th 1895Chas Batchelor
Rea Batchelor

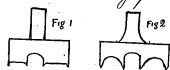
4 Celluloid.

In experimenting with Celluloid paper we found that oil of turpentine will dissolve it in connection with alcohol cold equally as well as hot. Oil of Sassafras good solvent hot and cold. Oil of pennyroyal good solvent hot and cold.

Nov 6th 1895

Chas Batchelor

5 Cloth & Felt Washer punch.



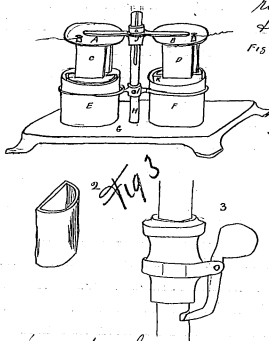
In making punches for cutting felt rollers washers they were very liable to break off around the rim when made like Fig 1 in hardening as the small quantity of metal in the rim cooled off is much quicker than the body. In order to obviate this I made one like Fig 2 bringing the Steel gradually to a point. This seemed to harden all right & gave no trouble.

Nov 8th 1895Chas Batchelor
Rea Batchelor

8 Autographic Press Battery.

We have experienced a great deal of trouble in the battery for running the pen for our autographic press. Up to Oct 14 1895 we have used the French small Grenet battery 2 cells to each pen. They are however very unsuitable for a man's desk & our experiments have at last terminated in one to our entire satisfaction. It is easily cleaned & comes all apart, it cannot tip over, we use porous cells & the carbon & zinc can be lifted up.

A & B are circular disks of thick rubber which hold the zincs & carbons of cells E & F.



which are glass & let into the iron base C about an inch. I in a spectacle secured to upright #1 & keeps the pen in proper position. The sliding bar which holds A & B & it is kept from turning on the shaft by a screw which runs in a groove in upright. The porous cell is D shaped as shown in 2 on the

back of 5 there is a click which drops in a slot across the upright when it is lifted up. This is better shown in Fig 3. Thus we found to be the only battery that would do for the purpose. & consequent-ly adopted it.

Nov 21st written. adopted Oct 14 Chas Batchelor

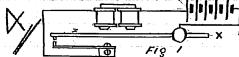
1895

(9) A New Force (?)

In experimenting with an electromagnetic vibrator such as shown in Fig 1 Mr. Edison & I noticed a tremendous spark passing between the cores & the vibrating rod z. This is a very common occurrence & often seen in relays etc & accounted for by saying it was caused by induction. This however was such an extraordinary spark that we thought there must be something else besides induction there. We found that by touching the end of rod x we could draw sparks from it in abundance. We fastened a screwdriver to the end of a glass rod 3 feet long & drew sparks from x with that. We connected a wire to x & carried it over to the stove 15 feet away & on rubbing the end of the wire on the stove we got brilliant sparks from it. We now connected x to the gas pipe & we could draw sparks with the blade of a knife from any part of the gas pipe in the room. A large body of metal was now placed within 2 inches of x & we then drew sparks from it although it had no connection with x other than the wire both were on. Mr. Edison thinks this is a new force. It would not move a Bradley Gale. It had no taste. You can turn the wire back on itself & get a spark. Chas. Batchelor
Nov 22nd 1875

10 A New Force

The following very curious experiment was tried. The vibrator at x was connected at x with the stove & also with the gas pipe notwithstanding this brilliant sparks could be drawn from the stove with a knife held in the hand. We now slipped a Bohm spool over the vibrator at



x & connected the two ends to a Bradley Gale but could get no deflection. We got sparks from all the metals at x. We could not get sparks with Boron & Selenium. When taking sparks from x with Tellurium strong smell of garlic was observed. Chas. Batchelor

Nov 23rd 1875

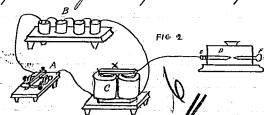
11 An Optical delusion

When a vibrator is being made to give a spark rapidly a curious delusion may be seen. Imagine two fixed points A & C one on each side of B where the spark is. Look quickly from one to the other directly through the point B. A row of small sparks will appear from B & C as you look toward A & from B & A as you look toward C. If you look across very quick the whole row from A & C will be seen. Nov 23 1875 Chas. Batchelor.

12 A New Force

We succeeded in getting sparks over a wire running from Newark through New Brunswick to New York & back to Newark but it might be that the force travels across the table instead of going out on the line. We shunted the vibrator with a solen magnet & got no spark we suppose because the induction had a route to circulate in instead of forming a new force. But when we shunted it with a solen we could get it. By increasing the battery power from 8 to 12 cells we got a spark when the vibrator is shunted with 3 ohms. (The vibrator magnet is 6 ohms). With a glass rod 3 feet long well rubbed with a piece of silk (warmed) & a piece of carbon tied on to the end we got sparks with the carbon when held to the vibrator. Yet the rumor

galvanometer, chemical paper the gold leaf electroscope would not be affected. A piece of ebonite held to the wire gave faint sparks. We made a box like Fig. 1 in order to observe the sparks it was composed of 2 graphite pencils inside a dark box with an aperture to look in at the top. We now found that it was necessary to have a vibrator to show this force we got it from the following:



the sparks
Nov 24th 1895

A New Force

We made the following experiments with every instrument thoroughly insulated: The apparatus arranged as in Fig. 2 Oct. 12:

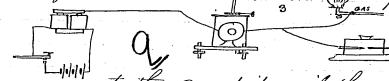


In this case the core of our magnet was lengthened & a spool slipped on the two ends of the spool & the core was connected to the box & we got a weak spark. In Fig. 2 the magnet is what we call closed by the piece of iron or armature over the top of the bar laid on this & connected to the points a fair spark may be obtained.

When the wire is connected to gaspipes at each side of box it makes no difference. With a piece of hard rubber 1 inch long as part of the circuit we got the sparks at intervals with 14 inches of glass in circuit have got sparks at intervals.

Lengthened the cores to $\frac{1}{2}$ inches & then placed

cadmium bar on top & got the sparks brilliant. In Fig. 3 the line passes through a delicate mirror galvanometer



to the gas pipe if there was the slightest amount of dynamic electricity on that line this instrument ought to detect it & yet when the points are connected to the other side of the galvanometer sparks can be seen though it will not deflect the needle in the slightest degree. With an Eppius condenser in the line we get splendid sparks when both plates are in contact & weaker ones as they recede from each other. When both brass discs are 6 inches apart sparks can be got at intervals.



When the piece of Cadmium formed part of the electric circuit & the line was taken from it no spark could be obtained.

A Magnet electric machine had both handles connected to the wire leading to the pencils & good sparks were drawn from it. When four magnets were connected together for quantity they gave a spark only equal to our spool. When 13 magnets are connected up for intensity we get a better spark than with one. When we place the Cadmium on a single spool with iron core & of 400 ohms resistance & 4 inches long, we get an irregular spark. Connecting both ends of this magnet to the Cadmium bar improves it so that it is almost as good as the 25 ohm spools we have used all along. These experiments were conducted by Thos. A. Edison

Nov. 26th 1895
Newark N.J. USA

& Chas. Batchelor

14. Etheric Force

Mr Edison & myself found that addition of battery in the electric circuit increased the volume of spark on the carbon points. We found that several persons could obtain sparks from the gas pipes at once, each spark apparently equal in volume to any single one. We found that if sparks were drawn off with the blade of a knife, placing the other hand on the gas pipe greatly reduced them. At the extreme end of the gas pipe in our laboratory sparks were being obtained, three feet from this place the pipe was grasped by the hand & the sparks consequently reduced, water was now poured on the floor where the person stood who grasped the pipe & a large piece of iron placed on the wet floor & connected to the pipe with copper wire this did not diminish the sparks at all, & the man now stood on the wet floor & grasped the pipe but the sparks still were just as good, This seems very paradoxical it would seem to be reduced by the current running to ground through the human body yet when you put better conditions for it doing so it apparently would not pass at all.

A person taking hold of the wire from the cadmium & with a piece of wire or metal in the other hand touching any piece of metal can get a spark showing that it passes through the human body.

Again three persons standing on blocks of paraffin & joining hands, the end of the wire held by the first man the third one could draw sparks from the stove with a knife in hand showing that it would pass directly through 3 human bodies although the spark was diminished a little.

Nov. 30 1875 Newark N.J.

Chas. Batchelor

15. Etheric Force

Mr Edison & myself found that it was not necessary even to have a magnet or to use a cadmium bar as it could be obtained with almost any metal with just a spool of wire.

We have got sparks when the electric circuit had 1000 ohms resistance in, & when there was no iron in spools & the spools connected so as to give the least amount of magnetism.

We now passed it through the scutcheon of a frog leg but got no indication of a current although we got sparks through it & frog was tested for delicacy.

Trud to put the induction spark over the same amount of glass that the etheric has gone over but without avail & we found that the etheric current would travel through a great many times more space than an induction current giving a spark.

About sixty chemicals were tried to see if we could get etherochemical decomposition but without avail.

Chas. Batchelor

Dec 3 1875 Newark N.J.

16. Acoustic Telegraph

Mr Edison proposed some time ago that the study of Acoustic telegraphy would be remunerative as it seemed to be very difficult to make practical the inventions of Gray & others so we have worked this up & intend to follow it for some result. Our experiments so far have been confined to reeds of Swiss steel but have had a pair of tuning forks made giving 256 vibrations per minute & resonant boxes for them. These we placed on bases as in Fig 1 & the first principle we have tried to work was direct, entirely stopping the transmitting fork which would not work well

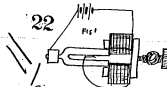
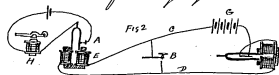


Fig 1 is the transmitter it differs only from the receiver in that the receiver has its contact outside the fork. W. Edison hit a very good idea for working the sounder in place of closing the local circuit whilst the fork is vibrating which is only a series of very quick contacts he does it in



the following manner
F is the transmitting magnet, & main battery, B key, E receiving

magnet, A repeating points, H sounder. In this case when key B is open magnet E works & vibrates fork opening & closing sounder circuit so fast that the induction from spool will not let it close but when B is closed it short circuits main battery & the points A stop on closed circuit working sounder. This works very well.

Dec 3 1875 Newark N.J.

Chas. Batchelor

14. Ethereic Force

The galvanic efferic frog was again the subject of experiment as Dr Beard had said that he had got contractions of the legs from etheric current, we now insulated every thing on 6 inch bottles & put the frog on an insulated sealer. When the wires were placed to the frog slight contractions were noticed showing the effluence of electricity which seemed impenetrable from the high insulation. Dr Beard thought that from the way in which the legs contracted that they gave movements both on opening & closing the circuit. In order to test this the wires from battery were taken off the self vibrator & a Morse key placed in its stead using the magnet with it. The etheric spark was tested & found good & then the wires were connected to the nose & leg of the frog. But upon working the

key on movement of any kind could be discerned although we got spark through it. The idea occurred & W. Edison that the movement of the frog was due to mechanical vibrations from the vibrator passing through the wires insulated the nerves of the frog. The battery key magnet was now dispensed with & it was found that a tuning fork during vibration touching the end of the wire attached to frog would affect it every time. In fact a tuning fork brought within an inch of frog, when vibrating made a sensible twitching of the legs.

Dec 5 1875 Newark N.J.

Chas. Batchelor

18. Ethereic Force

We run wires out in the street in the rain & lay them in the gutter & at the other end got the spark, it seems as if you cannot ground it.

Dec 6th 1875

Chas. Batchelor

19. Condensers

Edison & I made a very pretty experiment with condenser, we took 60 cells of battery & 8 condensers about 25 microfarads. I connected them as in figure. We then connected A to the gas pipe & held the other end B in the hand. When the condensers were discharged by touching the gas cock with B a most beautiful spark was observed which spread out about 4 inches across, each spark seemed to be made up of a series of straight lines radiating from the centre & each ending in a peculiar ping shaped end or point. Although there was such a brilliant spark when the two wires were held in the hands & touched together to discharge them the shock felt

was very small indeed. Cha' Batchelor
Dec 11th 1898

20

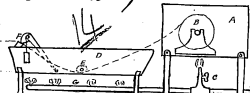
Etheric Force

Mr Edison, J., & Dr Beard went to the Stevens Institute of Technology to try some experiments. We found we could not use their large electro-magnet as it took 30 seconds before it got its full charge. Their electroscope was out of order & we could not use it. We got the spherical vacuum of 3 inches in length. Could not get it through a perfect vacuum.
Dec 14th 1898 Cha' Batchelor

21

Condensers

Having occasion to make 24 condensers we used for the first time an apparatus made last January for the same purpose but not used then it consisted of:



A is an oven kept about 180° Fahr. B is the roll of paper, D is the trough for paraffin. E is a roller under which the paper passes, F is the stripper for taking off the surplus paraffin & G is the gas jet which keeps the paraffin hot. The principle is to take the paper till it gives up its moisture & then directly drag it through hot paraffin & draw it out along a board about 30 feet long holding it above board until it has cooled & then chopping it in it. The board is marked where to cut the paper into sheets. As it passes under the rubber F it strips it beautifully leaving a perfectly even thickness. It more than answers our expectations.
Dec 20th 1898 Newark N.J. Cha' Batchelor

22 Etheric Force

A curious experiment was tried this evening, it consisted in getting the etheric spark after it

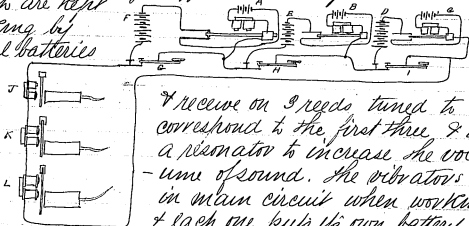


had passed over in one case four feet, & in two cases two feet of air. A is the vibrator or generator, the point at which the etheric is called off, B C D & E are 12 x 8 sheets of tin foil suitably hung from insulating stands, B C are 24 inches apart, C & D are 48 inches apart, D & E are 26 inches apart, a wire is connected from E to one point in box F, the other point being connected to ground by gas pipe. Notwithstanding the air space between the tin foil sparks could be got in box F though they were at intervals.
Dec. 26th 1898 Cha' Batchelor

23

Acoustic Telegraphy

We have at last been able to receive three messages in the same direction on the following plan conceived by Edison. We send with three reeds giving different rates of vibrations which are kept working by local batteries



I receive on 3 reeds tuned to correspond to the first three, & use a resonator to increase the volume of sound. The vibrators are in main circuit when working & each one puts its own battery in.

A B C are the vibrators & batteries (local), D E F are main batteries, one for each & H I are dubler keys J K L are the receivers with permanent rubies attached for in-

creasing the volume of sound. We have experienced a great difficulty from the fact that when you are working with a single battery & the vibrator of one transmitter is working between two points a & b in Fig 2 & you suddenly put on another vibrator the first one will tend to change the place of its extreme points so that it is working between c & d instead of a & b. This is entirely obviated when each vibrator runs in its own battery.

Dec 26th 1895

Chas B Atchelor

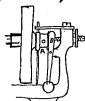
24

Autographic Pen

We made a great improvement in the pen by giving the cam plenty of side shake and putting a guide above the cam so that it could only move the needle up and down and not at all sideways. The spring is also improved by being made stiffer at the point so that it hardly springs at all between the pen point and the end of spring.

February 7th 1896

Chas B Atchelor



Addressing Newspapers

I have just thought out a new method of addressing newspapers. Take a long strip of parchment paper and write all the subscribers names one after the other:— Thus:—

John Smith
High Budge
H.C.

Charles Haskam
Horswill
H.C.

Feb. 16 1 year 1896

Mar 10 1/2 year 1896

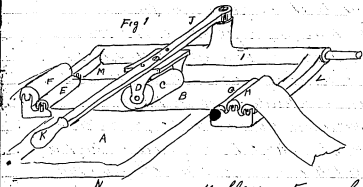
with the 'Electrical pen'. This strip of punctured paper goes into a machine designed to feed it along at given times the length of one name.

The wrapper is put on a table under which the stencil & by a movement of a lever down the paper is fed, the stencil comes down, and a roller comes down on the stencil; and, by a lateral movement of same lever, the fac-simile copy is made. In lifting the lever away roller, stencil, and every thing comes clear & the paper can be moved and another put on.

Fig 1 shows a rough sketch of the principle by hand.

A is the wrapper on the bed plate M. B is the stencil. C the roller D the roller frame E & G the holding

rollers F is the feeding roller I is the body of lever J is the handle.



It probably would be a great deal better to have the paper and rollers on an independent frame from the lifters and the arms so arranged as to fit in slots when lifting them up, & when the carriage is let down it fits in slots in the bed plate so that it cannot move or get out of place.

The feeding arrangement can be furnished automatically by weight or by the lift of the lever.

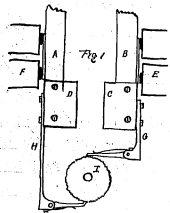
I have explained the manner of doing this by hand because I think it may be more practical at first in country offices but it can also be done automatically, feeding itself with paper and printing the names at a more rapid rate than can ever be done by hand.

August 21st 1896 Charles Batchelor.
Knox Batchelor

26. Electric Sewing Machine

In experimenting with large tuning forks we found that more power could be got out of a magnet by means of them than by any other means. We resolved to apply them to the driving of sewing machines.

We took a reverb fork of bellmetal with $\frac{3}{4}$ inch prongs and carrying 24 weight on each prong & fitted an attachment to it as shown in Fig 1.



A & B are the 2 prongs of the fork
C & D are the moveable weights E & F
the driving magnets, G & H are 2
arms extending from prongs and
carrying driving clicks for ratchet
wheel & shaft I. On same shaft as
ratchet I we put a 20 lb fly wheel
and drove a Nelson & Billo machine
from it. The ratchet I has 300 teeth
& the fork gave about 60 vibrations

per second. We succeeded in driving the machine at the rate of 82 stitches per second minute through six thicknesses of shirting with a ordinary cell of Bunsen battery. This of course is nothing very great but it convinced us that the apparent great strength of a tuning fork when vibrated by a magnet can be utilized if you only strike the right way of applying it. In Fig 1 the click H is much farther from the fork than G and consequently the prong A has much more work to do than B; this throws the fork out of time (when it is very weak and will do no work at all) but by moving the weights on prongs they can be brought into time and all maximum strength of the fork is gained when both prongs are exactly in time. I have now commenced on a large fork which I think will give us a surplus of power.

Oct 22nd 1896

Charles Batchelor
Wentworth Park N.Y.

Door plate register

I have devised a very simple means and cheap which when placed on a door & you leave the room informs visitors whether you are in or out and also what time you will return.

Device for fastening papers together
I have just thought of a means by which a lot of papers etc can be fastened together by one simple movement of a lever something like what is used on a hand stamp either by eye-lifting or by putting through a double spike

and opening out the ends. It could be done probably easier by means of two levers one to punch the hole and the other to place the cycle in & close it up the whole to take up about as much room as an ordinary hand stamp. It would have to feed the cycle automatically which I think is a simple thing to design. It might be so arranged that the up movement of the lever would punch the hole while the downward motion would put in the cycle & close it up.

Wento Park, N.J.
Nov 21st 1896

Chas Batchelor
Rosa Batchelor

Duplicating Ink

About Dec 1st 1896 Edison devised with our help the following compound of ingredients to form a duplicating. And we now find that it will do more than any other known. You can take a copy on the letter press ⁴⁰ from such copy you can take copies on letter or other paper to the number of six good and altogether about 20 perfect ones can be made from the original.

5 lb of Aniline Violet	} Standard coloring solution
4 1/2 Gall. Water	
2 1/2 Gall. Alcohol	
20 lb. Gall. Hot Water	} No 2 Standard body solution
2 1/2 lb. Gum Distillate	

One part by measure of No 1 to every four parts of No 2 the stand well before bottling.

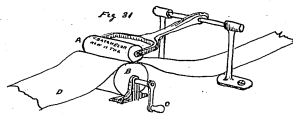
A copy can be taken from a letter press copy at any future time
Dec 15th 1896.

Chas Batchelor

Edison's Autographic Power press.

I made a machine like sketch to prove the practicability of working on a rotatory press.

The stencil is fastened on the felt roller A by clapping it round and is held tight by bands on the end. The roller B is turned by handle C and at each revolution of A a copy is left on the endless band D. This worked well but wanted great pressure and we now think that the stencil ought to be placed on roller B and to have three or four rollers placed like Fig 32.

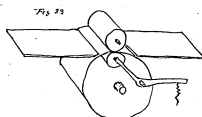


with considerable pressure on them this being the same as rolling over the stencil four times.

Chas Batchelor

Jan 14th 1897

Edison's Autographic Power press.



Our next endeavor was to turn a cylinder and cut a piece from the surface so that the stencil could be fastened to it (as in Fig 33) and have a roller running on top which acts in place of a press bed

and the int roller placed inside which when not running on the stencil is distributing on the inside surface of the cylinder.

We got fair results from this device, the paper was fed by two springs fastened on the cylinder which were lifted at the right time by the cam on the feed plate and after raising, camming out and falling back in position it came down on the paper and held it tight on to the cylinder this device

shown better in Fig 34. it was completed January 1877

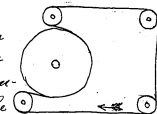
Fig 34



We next devised the means thus:-
We used an endless band running as in

Fig 35 over the cylinder A and the four rollers BC DE. Ink rollers FGH run on the outside of the cylinder and are independent of each other. The strip of paper is drawn over the top band which it travels along displacing over the end of machine. This plan we have concluded is so far the best we are using rubber cloth as a band. we have tried brass and copper sheet

Fig 35

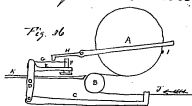


Feb 1st 1877.

Automatic Press for Autographic Rotary Press.

We considered that the press would be of very little consequence without a self feed and therefore put on the one shown in Fig 36

Fig 36



A is the cylinder B the feed roller
C the feed lever. E picks up the paper
H is a lever moved down by the pen
I on the band. As the band

moves in the direction of the arrow projections on its sides move the lever C and another on the other side and give the lever D one movement backward and forward for every revolution of the band. F is a pen held up by the spring G off the paper. This pen is furnished with a piece of rubber on its end which is heated occasionally to make it adhere to the paper. The pen I on the belt moves the lever H down on to the spring G and thereby pressing the rubber on to the paper it lifts one sheet up and waits till lever C carries it over to the drum A and takes it round. This works admirably.

Feb 2nd 1877.

Speaking Telegraph.

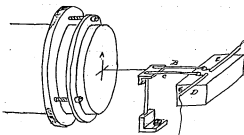
Oct 13th 1877.

Edison thought that the speaking telegraph of Bell was very imperfect, seeing that it could only be used on very short lines, and he maintained that if we could by any means get the resistance of the circuit increased and decreased by the raising or lowering of your voice, it could be used on long lines.

I therefore made two instruments, a transmitter and receiver. The principle of the transmitter was to make the vibration of a membrane work a roller along a lead pencil mark or other high resistance, altering the resistance of the circuit every time the membrane is excited.

This was done in the following manner:-

Fig 37



as shown in Fig 37 A is the membrane. B & C are fine springs with Platinum springs or rollers on their end E & F are two pieces of metal used as connections. The lead pencil was rubbed on stone D between the rollers and the connecting

pieces E & F. This however did not give us the desired result as all we could get was a mumbling sound.

Another plan we tried was a band across the diaphragm with projecting pins which operated on the springs B Fig 38. the idea being to get the articulation by cutting out or putting in resistance.



Fig 38

Our receiver for these instruments was merely a stretched diaphragm with an armature on the centre and a magnet adjustable to it as in fig 39.

Our next transmitter was a disc of black lead in front (and adjustable) of the diaphragm. This has been so far good. We have used a hard



Fig 39

rubber diaphragm covered with blacklead. as the diaphragm vibrates it touches in more places and reduces the resistance. With this apparatus we have already been able to distinguish clearly (known) sentences well between New York and New York.

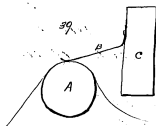
Speaking Telegraph.

March 15th 1894

We made a transmitter in which the diaphragm struck against two @ discs of Plumbago fastened to springs this seemed a little better.

We also found that the words appeared plainer when received on a rod fastened at both ends & which was attached a sounding tube.

We also find that the best way to receive and hear the words is on the Electromagnet principle in which the current is passed through a spring B during the time it is pressing on a strip of chemically prepared paper carried along by the drum A. C is a resonant box to increase



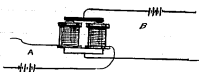
the effect

Chemical Repeating Magnet

April 16th 1894

Edison made a relay on the principle of the difference of resistance on Plumbago when under pressure of different degrees. By taking a magnet (electro) as

Fig. 44



in Fig 44 and placing the small cakes of Plumbago on the cores and letting the armature rest on these.

When circuit A is open the armature does not press down and consequently circuit B is stuck a resistance. That it is practically open, but when A is closed the magnet pulls the armature down with force, and the circuit B is worked with a force that is at all times regulated by the circuit A.

Action of Chemicals under Pressure. April 20th 1894

Boracic Acid when pressed in a die one inch in diameter comes out a beautiful white hard substance like ivory but does not cut with a chip.

Protosulphide of Iron makes a solid mass exceeding in porosity so much so that when you place your tongue on it, it comes off with difficulty it is reddish in color Sesquioxide of Iron also acts the same.

Benzoate of Soda is very like Boracic acid but not quite so hard.

Salicylic Acid is white and very like ivory.

Gum Dammar makes a very hard lump and compact it is grey.

Gum Dammar and Kadolin make a very compact hard lump like very hard clay almost white and very porous.

Gum Dammar and Camphor mix pretty well but the difficulty of powdering camphor renders it difficult for them to mix completely.

Sulphur of Antimony makes a cake which breaks off in cakes very brittle (black).

Angole squeezes up into a compact mass.

Plaster of Paris and Camphor in alcohol presses up into a solid hard mass.

Letter Copying.Oct 30th 1894

Arsenic Acid when written with upon paper raises up the writing very much, sufficient to be felt by the fingers. It also eats away or dissolves the paper so that you can take copies from the writing by rolling an inked roller over it with paper underneath.

When writing a slightly dampened sheet should be placed underneath the paper

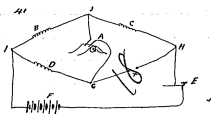
New CompositionMay 5th 1894

When alcohol and camphor are dissolved in alcohol and then sulphur mixed intimately in the solution with continual stirring and this solution suddenly precipitated with water you have in this precipitate a peculiar scummy substance

June 1st 1894

When grinding a lathe tool at the stone I noticed that when it jammed and produced a high note the hand holding the other end of the tool perceived a sensation of burning whilst the hand between felt no heat at all. I think however that the heat is due to the rubbing of the steel by rapid vibrations on the skin of the hand

Induction of magnets

June 6th 1874

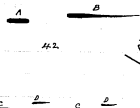
In the diagram 41 A is a drum carrying chemical paper (probably Edison's solution of Ferrous sulphate of Potassium and Salt as it is exceedingly sensitive and permanent)

B, C, D are resistances in three sides of a Wheatstone bridge F and D being equal and of high resistance and C being equal to the magnet to be tested which is placed at X E is a Morse key and F a battery

If X were plain resistance there would be no mark on either pen on opening or closing E, the bridge being balanced, but being a magnet it sets up a current itself which circulates in circuit H.S.O. overbalancing the main current and obliging a part of it equal in volume to itself to pass through the bridge wire, in doing so it leaves its marks (under positive or negative) on one or other pen. On closing the key the magnet discharges in the same circuit H.S.O. but in the opposite direction and leaves its direct marks on the other pen.

Thus with this device we have on closing, a mark produced by the exact equivalent of the current set up by the magnet on opening we have the same magnet's direct marks for its own discharge.

These marks have peculiarities which determine for us decisively the action of magnet during their charge and discharge. Thus when an ordinary relay is put in at X and the cores adjusted to touch the armature the closing of key or charging of magnet will give a mark like A and on opening one like B

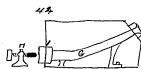
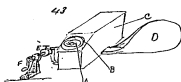


Now when the armature is adjusted a little away from the cores there is not so much difference in the marks. And when the armature is entirely away the marks come equal for both opening and closing as at C, D, E, & F

Speaking Telegraph

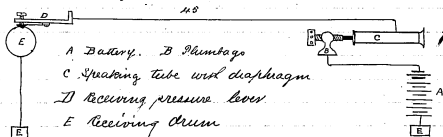
Mans. June 6th 1874

Our Speaking telegraph as now improved is far plainer and better than Bells. The apparatus at present consists of a speaker a receiver and a Morse key and sounder



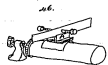
The speaker is shown in Fig 42 and consists of a bent tube having a mouthpiece at one end and an adjustable diaphragm at the other. This diaphragm when set in motion by a person speaking in the end of tube strikes against the point of adjusting part H. This point is made of compressed plumbago and isinglass which has the property of altering the resistance of circuit when pressed with variable strength, as is done by the diaphragm when vibrated by talking.

This variable resistance in our circuit gives us the articulation of the words and. Our receiver is a special form of Edison's Electromagnetograph, the stylus being fixed to a resonant box. The arrangement of our circuit is this -



In the receiving end we find yet that Sulphate of Soda is the best solution to work with. We find that this tube does not give us such sounds as are accompanied by stress of air such as P, B, Sh, H, etc and for this we have devised a new attachment as we believe that the stress of air

carries the diaphragm forward and holds it from vibrating freely. Our means for getting these sh & t vibrations is shown in fig 46 we cut a hole in the top of tube and put a pair of lips over it as at A above this and immediately between



we stretch a piece of rubber or parchment or copper foil, when talking in the tube all notes that have a stress of air with them come up through the lips and vibrate the blade of copper like blowing in the edge of a blade of grass and the other sounds will not affect it by this means we got good results.

Chas Bachelors

Speaking telegraph

June 14th 1894

We found now that combinations of Plumbago and Rubber and Plumbago and Caustic Magnesia amongst many others are the best for our purpose

Chas Bachelors

Duplication of copies

July 10th 1894

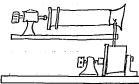
After vainly searching for a long time to find a process that shall be easier to work than Luccas's papyrograph we have at last found a process. Take an ordinary sheet of writing paper and cover it with Collodion now take a stylus and write your letter with it. This either breaks the surface of the Collodion or rubs off a portion (we think the former) this sheet can now be used as a stencil and copies can be taken from it immediately. We find that Balsam Peru and Asphaltum furnish answers better to prepare the paper with.

Speaking Telegraph

July 31st 1894

We find that our apparatus for getting the sh, t, and s, is not perfect and in experimenting we find that these sounds will vibrate a diaphragm when spoken across a tube same as speaking across the mouth of a bottle, so we constructed a speaker on this principle as shown

47



in Fig 47 when you speak in the top tube you speak across the tube x and all 'singing' sounds vibrate the lower diaphragm and make the talking more perfect.

We now began to experiment on different diaphragms and we have made them of iron, steel, german silver, brass, mica, soft rubber hard rubber, paper, card, collodionised paper and many other materials. We have had different kinds of openings on them some of which are shown below the best of which we find is shown at

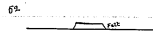


Fig 50. This must be made very delicate so that the diaphragm vibrates independent of the tube. We have done some excellent work with this. We have now done away with the 'ist' tube and speak now in one tube the diaphragm being made to respond to the 'ist' sounds by cutting a slot in the mouth piece so that these sounds strike on the edge

the stress of air passing down and out first causing a vibration which makes the diaphragm to respond.

Up to the present date we have used solid plumbago.

compositions but we find by testing on a galvanometer we find that we don't get the amount of variation in the resistance we require by slight pressure. Having found that we must not break the circuit but work entirely on differences of resistances as this stops all outside noises, bucktangs etc. We take fine wool and rut it in plumbago and press into a small cap which of course is springy when this is put in between the spring on diaphragm and platinum face of adjusting screw the talking is absolutely perfect and with this device I can and have taken a message of about 75 words through 1000 times perfectly without breaking of matter taken at random out of the newspaper. The plumbago is a little liable to shake out and consequently is deteriorate but we could make a band of it and continually expose a new place.

Chas Batcher

Shop Gas pipe Telephone

July 31st 1894

We find that by putting a diaphragm on the gas pipe on a shop conversation can be carried on from one floor to another without in any way injuring or affecting the working of the gas. It will not go through the meter.

Chas Batcher

Speaking Telegraph.

Aug 4th 1894

The speaking telegraph as now made by us and being made by Murray of Newark is shown in the following sketches

Speaking Telegraph.

Aug. 10th 1894

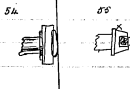
We find that with our transmitting apparatus and a magnet before a diaphragm for a receiver (a plan we frequently tried in the early stage of our experiments) we get splendid talking but lose. It is however preferred by Mr David of Pittsburgh who has given it a very thorough test. I made two pair and today we tried it between 197 Broadway and the Cleburn house in New York when Mr Camp and several other gentlemen operated on it

Chas Batcher

Speaking Telegraph

Aug 20th 1894

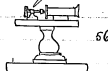
I finished today and shewell work Edition & Mr Otis two pair of our new speaking telegraphs. The transmitting apparatus is improved by coating silk fibre with plumbago (thoroughly) and placing a wad or twist of this material between the spring and the platinum adjustable face. It is exceedingly delicate in regard to altering the resistance of circuit by the slightest pressure.



In order to keep this 'fluff' from falling out it is enclosed by a hard rubber piece as in fig 55 at x.

This 'fluff' has considerable resistance and therefore when not talking we cut out this by a switch. The transmitter is put on a stand as in fig 56

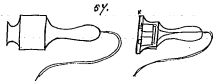
as also the receiver which is improved by putting a piece of rubber between the diaphragm and frame of magnet which dampens and kills continuous noises.



Speaking Telegraph.

Aug 24th 1894

Made and showed at 191 Broadway two pair of new Speaking telegraph instruments made with handles as in Fig 57 flexible cord running through the handle. The receiver R is a magnet set in cup and a loose piece of plate tin laid on top fastened from falling off as in Fig 58.

Sept 1st 1894

Finished today a pair of Speaking telegraph instruments made with flat handles at right angles to the axis of barrel part of above instruments.

Sept 6th 1894.

Having a little trouble from the plumbago shaking out of our wads or fluffs we desired to use Silvered silk instead and as the method generally known (that of saturating material in nitrate of Silver and reducing silver by holding over Phosphorous dissolved in Bi-Sulphide of Carbon) is difficult and dangerous we found that fresh phosphide of Calcium dampened giving off fumes of Phosphoretted Hydrogen would reduce the silver very quick.

The silk so prepared however when used in the Telephone gave noises which we could only account for as the action of the current in the nitrate still in the silk.

I have noticed that our telephone in places where there are a great many wires on the poles works better in wet weather than in fine weather. This is so decidedly so with Bell's

Chas. B. Atchell

Speaking Telegraph.

Sept 24th 1894

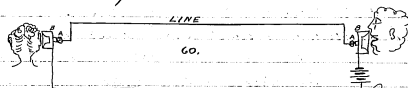
We have devised a new way for holding our fluff in the speaker as in fig 59.



A is the diaphragm with piece of cork C shellacked on, on the end of which is a disc of metal $\frac{1}{16}$ of an inch in diameter.

B is a brass piece hollowed out to receive the rubber piece E which is made with a flange to prevent the fluff from coming out when placed inside, into the rubber placed in the brass. B is also supplied with a screw D which fits any machine and consequently new fluffs can be supplied enclosed in this manner.

We find that we can receive on our transmitter as well as talk. This is very peculiar and must be due to expansion and contraction of of the plumbago by heat which causes the mica diaphragm to vibrate the circumstances of the circuit are as follows:-



A is the silk fluff. B the diaphragm. The compression of the fluff at one end by the voice shortens the resistance of the circuit and heats up the other fluff which expands and retracts causing the diaphragm to respond.

In Fig 59 this screw fits in the piece that slides into the stock.

Chas. B. Atchell

Speaking Telegraph

Nov. 9th 1877.

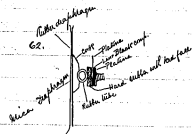
Our fluff holder contained silk saturated with Plumbago, but this we find shakes out with time, and the articulation consequently deteriorates; we have substituted silk cloth covered over on both sides with a thick paste of plumbago and dextrin; this silk is cut in discs, and a slumber of them is put in the holder, and the resistance of the circuit is altered by pressing them together and opening them out again. We thought this an improvement but these also deteriorated not by losing their plumbago but by continual tamping they get perfectly flat and without spring.

Mr Edison also found out that plumbago does not alter its resistance by pressure as we at first thought, but the increased pressure made better contact and as this was the case we proposed to use hard fluffs made of a combination of plumbago and other materials.

The best combination we found is 1 gram lamp black (No. 1) and 200 milligram. Rubber dissolved in Bisulphide Carbon this is very sensitive and we make it into a small cake perfectly flat on

61

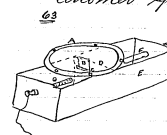
both sides as in 61. The construction of the telephone was slightly altered for this purpose and as we make it now is shown in 62



the centre of the mica is placed a disc of cork to which is attached a piece of flexible tube which acts as a peculiar spring, this pushes against a

small disc of rubber faced with kid, next to the kid is a disc of platinum foil and next to that our composition cake of lampblack and rubber which rests upon a platinum surface. The faces of these discs must be exceedingly true in order to get more points of contact. We have now one hundred made after this plan and they work well we have yet to see whether they will stand

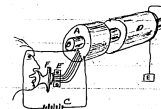
63



Another speaking telegraph we made as shown in fig. 63. A is a diaphragm mounted over a tin cell box E in which is two electrodes r & b in the partition D is a fine slot which is closed or opened by the plate B which is fastened to the diaphragm thus altering the resistance of the circuit on each movement of the diaphragm.

This works pretty well the articulation being good but low.

We also made another telephone thus:-



64

Fig 64. A is a spool round one B which is kept permanently magnetized by battery C; this by induction sends currents

over the line through spool D. In spool A each layer is connected by wire to a platinum point in an insulated stand E so that you have a row of points very close together each one connected to its respective layer of the magnetizing spool A. You now place a diaphragm with an elliptic spring on its face in front of these points so that it shorts out the magnet and gives variable magnetism. In order to give all the finer sounds the magnet A should have a great number of

layers or the wires should be connected to the stand
very frequently during the winding of the magnet.
Chas. B. Chelton

Speaking Telegraph.

Nov 15th 1877

The principle of increasing and decreasing a
local polarizing circuit as shown in Fig 64 we
have tried as shown in Fig 65.

A is a diaphragm on which is
fastened an elliptical spring
which is pressed on to the spool
of fine platinum wire B short-
circuiting the coils and contin-
ually altering the resistance of local polarizing
circuit E. D is a magnet on line working by
induction from C. We tried this and the spool
B measured (35) ohms and with very loud talking
it was reduced to 2 ohms.

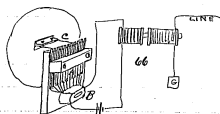


Fig 66 is also another way
of doing the same thing
but a more reliable one.

A is a lot of springs each
connected with resistance

circuit B so that when knife edge C on diaphragm
touches points of spring it will short circuit some
thus increasing and decreasing local circuit.

Plate C must have its edge about 2 1/2 of an inch
out of square so that it will touch three at
the end first and then each successive one
from the device in 67 we got very fair talk-
ing. Diaphragm vibrating

caused the platinum spring
to alter resistance and we
got talking pretty fair.

Spring makes about a

great deal when talking

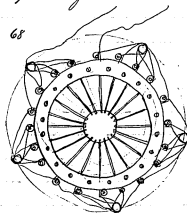


Chas. B. Chelton

Speaking Telegraph.

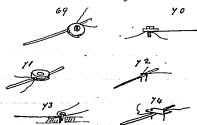
Nov 17 1877

I proposed to Edison that we should make a
telephone on the principle of Fig 66 but made
in a circle, as one great trouble with 66 was that
there was too much strain on one side of the
diaphragm. This we have done in the following
manner 68 is the arrangement



of springs which we call the
"sunflower" all having their
ends bearing on the edge of
a hole perfectly true on the
face. The diaphragm
is so arranged that in the
1/2 of an inch movement
it closes circuit with them
all one after another.
spring and faces on them

These springs are hair
pins with platinum



Ways of fastening connection to
hair spring

69 Screw + washer clamp

70 Spring soldered to washer

71 Split washer clamp

72 Staple

73 Spring bent + wedged in hole

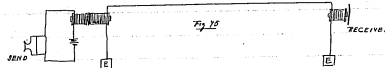
74 Cap held by pins

We however found that the rebound of these springs
prevented perfect articulation, and as yet we have not
found any means of dampening the rebound sufficient
ly to get it

Nov 24th 1877

We have found that our telephones as shown in Fig 62
works best when they are placed in a polarized circuit
and the line worked inductively. The range of ad-
justment is very great working as well when the little
rubber ring is flat with pressure as when in its ordi-
nary state. The full range of adjustment does not seem

to alter it more than one ohm and consequently with plenty of pressure it is not as liable to alter and get out. Fig 75 shows it.

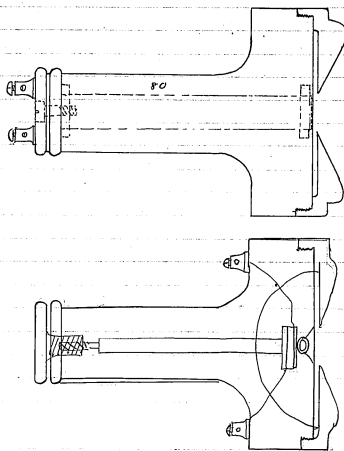


I have also tried to work on this local polarizing principle platinum points arranged as in 76 and 77. In 76 A is agate and B is platinum and spring on diaphragm strikes no point but rubs on the surface. In 77 we have two diaphragms each with a platinum point on and one adjustable screw against one the other has commenced to move and consequently the points do not strike so sharp. I have also put the whole thing on the diaphragm thus Fig 78 and have tried 79 two diaphragms one with point and the other with a small piece of rubber tape round which was stretched fine platinum foil.



Chas. B. B. B.

Shaking telegraph Dec 1st 1847

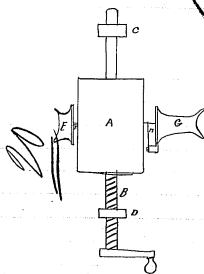


Phonograph.

Dec 4th 1877

This machine we devised for the recording and reproduction of the human voice; it consists in moving a sheet of tinfoil in front of a diaphragm having an indenting point in its centre, which when vibrated by the voice indents the number of vibrations accurately on its surface, this indented sheet is afterwards moved in front of another diaphragm to which is attached a point on a delicate spring. The movement of the spring in passing over the indents on the tinfoil transmits to its diaphragm the ratio of vibrations recorded there and the diaphragm gives forth the sounds originally spoken.

The machine spoken of shown in Fig.



A is a cylinder fast on the shaft B. This shaft has a thread on one end which engages in bearing D. The other end slides freely in bearing C.

The cylinder A has a groove or thread cut on its face to allow the tinfoil which is put round it to be indented.

E is the speaking diaphragm provided with an indenting

point F. G is the reproducing diaphragm which receives its vibrations from spring H. The words well and the plain "How do you get that?" comes very plainly.

Chas. Batchelor.

Phonograph.

Dec 26th 1877

We tried a very interesting experiment to-day sent man to New Brunswick to work one end of telephone during experiments we spoke a sentence to the Phonograph and afterwards held the transmitter to it so reproduced them the sentences were received perfectly at the other end by several people.

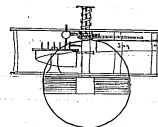
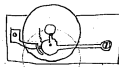
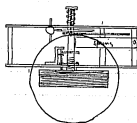
Chas. Batchelor.

Phonograph.

Jan 29 1878

Whilst Edison and I were experimenting at Menlo Park, N.J. with the Phonograph in order to apply it to speaking clocks we found out that soft rolled copper answered excellently for recording in place of tinfoil and although the indents could hardly be seen in some cases, it came out clear and louder than ever before; of course with copper we could use a stiffer spring and have it more rigid in the diaphragm than when we used tinfoil.

I designed three different ways of applying it in place of the sticking attachment for clocks.

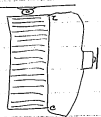


Chas. Batchelor.

Speaking Telephone.

Feb 4. 1898.

I conceive the idea that a battery might be so constructed that its resistance could be varied by the action of the human voice, either by pressure or by the increase of surface of one pole.



For instance a battery like as in Fig with diaphragm on top to press down as the words are spoken against it. If you can only alter it one ohm it will be sufficient as nearly all the talking on our Carbon telephone is done on only about 6 ohms difference and we have got it just well indeed on a difference of only one ohm.

In Fig. I should make a copper diaphragm and should use a low resistance magnet to receive on.

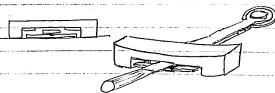


Chas. B. Ketchum.

Switch.

Feb 4. 1898.

On our telephone end we used a switch that has a left and right point but it has to be left when not in use or neither of these but must stand between, for this purpose I devised the switch shown in Fig. it works admirably and comes to centre instantly.



Check Stamps.

It occurs to me that if a machine could be made to cut out or even emboss or raise up the figures on a check it would be very valuable and come into general use amongst banks and merchants. It would have to cut it out something like this

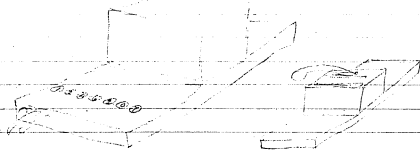
—34002129—

In order to answer it would be necessary to—

1. Make 8 changeable wheels.
2. Make it so that the dash is always before and after and no space between so that the first dash would be altered almost every time and the last one scarcely at all or it might be always stationary then
—...21.29— or it might be
-----21.29—

Feb 4. 1898

Chas. B. Ketchum.



Speaking Telegraph

Apl 2nd 1898

We had a test today with Edison in New York and Batchelor in Philadelphia of the Edison Carbon telephone and the Melfo Magneto telephone. The wire used was a no 6 wire and run right along the railroad amongst 22 or 23 other wires some of which were working the Washington 'Quad'. The induction was very heavy notwithstanding this. Otis and Bentley conversed with perfect ease on the Edison instrument whereas with the Melfo not a single distinguishable word could be got. The Edison was the most improved pattern transmitter with thick plate and solid connection between the plate and the aluminium so that it works more by pressure than by vibration. The Melfo was a new large magnet and double diaphragm placed as in sketch and when put on the line the usual 'jelly' part is turned into a complete roar. Nothing could be got over the wire and in a conversation over the Edison instrument the Melfo acknowledged to Mr Otis that the Magneto was not capable of working such wires.



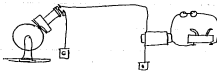
C/B

Is the sound on the telephone receiver produced by rarefaction and condensation, or by vibration of the diaphragm?

April 29th 1898

Experiments to find out something definite in regard to the above:

This experiment was the placing a telephone receiver on the mouthpiece of the phonograph from which with our loudest talking we could not



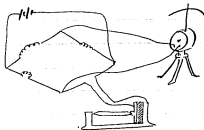
we could not get an indents on the tinplate.
2. I took the spool and core out of receiver and also mouthpiece out of the phonograph, and then fixed the core and spool so that it acted directly on diaphragm of phonograph the core only being 20 of an inch away from it with this device we could not get anything at all. This shows that the indents (if any are made by vibration) are infinitely smaller than those produced by the music box although you cannot detect even them with a magnifying glass of ordinary power. It may be that the action of the magnet core had something to do with the dampening of the diaphragm so as not to leave it free to vibrate.

Charles Batchelor

May 2nd 1898

Pressed Carbon Micro-thermometer

We have long noticed the expansion and contraction of our telephone cases and consequently variability of adjustment - and about the middle of April made an instrument to detect fine degrees of heat which consisted of a button of our pressed carbon suitably mounted with a strip of rubber resting against it on which the heat strikes lengthening or shortening same and pulling more or less pressure on



When arranged with battery and galvanometer in Wheatstone bridge it is exceedingly sensitive.

If a strip of gelatin be substituted for the hard rubber it is exceedingly sensitive to moisture also.

Edgar A. Tatchell

June 1st 1898

Microphone -

The arrangement of Hughes is an infringement of our rights and he has nothing but what we have already gone through to get our telephone.

June 6th 1898

When Sulphur, Vulcanite, or shellac is rubbed and presented to the surface of water, the water will reach up about a quarter of an inch and instantly go down again although it seems to touch the substance it leaves no drops after it. I think it is a raise just far enough for the electricity to discharge itself and then return. Positive electricity got by rubbing glass rod with silk as well as negative attract the water in this manner as well as small pieces of camphor floating on the surface.

I find that both positive and negative electricity repel a floating needle in the water whilst they both attract pieces of cork floating on the surface very strongly.

In a magnet I made for J. C. Bliss I found that the magnetism set one prong work and the other three south thus it is possible to make a magnet with two opposite poles south.



Chas. B.atchela-

Telephone Experiment

June 6th 1898.

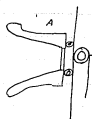
Edison and myself with Prof. Barker and Mr. Robinson tried some experiments with regard to how far off sounds could be made that would be affected by the plate on our transmitter and send over 100 miles. Prof. Barker was at my house with me. Edison stood 100 feet away and talked in his ordinary voice and we got it distinctly. The music box was played (15) fifteen feet away and heard distinctly. Our carbon buttons were pressed four times very delicate and had a silk disc on each side coated with plumbago.

Chas. B.atchela

Phonograph

June 14th 1898

Experiments to get clearer articulation in regard to the hissing consonants; our mouthpiece being deficient in this respect. Fig A is the mouthpiece as we at present use it



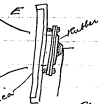
as we at present use it Fig B is same but with pieces of watch springs placed edgewise across the hole to increase the 'i', 'el', etc



I have tried two tin diaphragms and also 2 mica diaphragms also a very small rubber one and a mica one

larger behind. Re: - Fig E

Also two iron diaphragms with the one nearest to the mouth perforated with a number of holes but the plainest talking is to be got by an ordinary diaphragm with a piece of thick card perforated with a large number of holes in its center card fastened to the end of the mouthpiece. The card on the card turned to the mouth this without any dampers is the best talking for plainness I ever heard.



Charles Chelver

Phonograph

Aug 25th 1898

The principle of dampening the diaphragm on the phonograph is all wrong when dampened like this the finger so do not come as the diaphragm vibrates between the springy rubber and don't affect the spring on the tail. I have made a device for dampening both sides which gives equally good talking without the spring thus:-

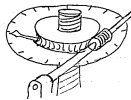




the articulation on this is slightly improved
but it has more harmonical sounds, owing
to the point being direct on the diaphragm

Carbon Resistance -

Aug 15 1898

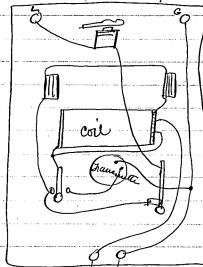
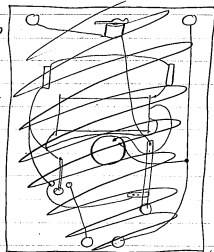


To make a resistance box of carbon
silk & work from 1000 to 10000 ohms
it is necessary to put on a memento
attached as the best dead left I

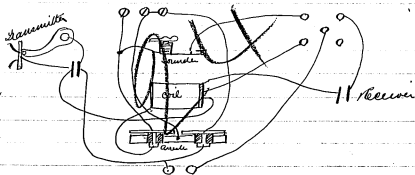
can get is only $\frac{1}{2}$ of an inch.

Edwards Carbon Telephone Bell and/or pattern
Connections Sept 3 1876

No cords
on this
pattern
but ear-
tubes

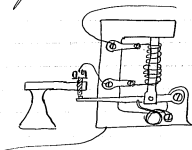


Edwards Carbon telephone as made by H.V. Tel. Co.
Desk pattern of Phelps Sept 3 1876



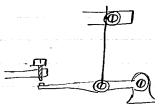
Electric Lighting : Subdivision. Sept 10, 1898

Exp. 1



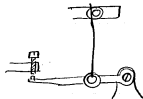
Platina spiral heated to incandescence expands a steel rod so as to open and control circuit. This works well but gets hot making one larger

2



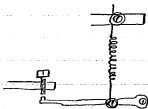
Platina rod heated to incandescence expands and opens its own circuit. This regulates very rapidly

3



Steel rod heated expands and regulates its own circuit

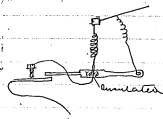
4



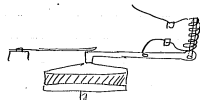
Platina spiral expands and opens circuit

- 5 Steel spiral in place of Platina gives very good light and shall do a great deal of experimenting with it in place of platinum on account of cost

Electric Light Subdivision
 Sept 19th 1898



Double circuit



Carbon regulator

Charles Batchelor Notebook, Cat. 1308

This notebook covers the period March 1878-January 1880. Most of the entries are by Charles Batchelor, John Kruesi, William Carman, and Stockton L. Griffin. There are also a few entries by Edison and Francis Upton. From February 1879 through January 1880 the notebook was used as an order book for experimental devices made in the Menlo Park laboratory machine shop. Included are orders relating to the electric light, the electric pen, the telephone, the electromotograph, and the phonograph. In April and June 1878 this notebook was used as a daybook to record accounts. From May 1879 until January 1880 it served as a record of telephones and carbon buttons shipped from the laboratory. A few entries for April and June 1878 contain lists of newspaper and journal articles sent to prominent scientists and other individuals in the United States and Europe. The front cover is labeled "Order Book No 1." The book contains 288 numbered pages.

Blank pages not filmed: 210-215, 218-227, 246-262, 267-273, 278-279, 288.

Missing page numbers: 1-56, 229-230, 263-266, 283-286.

E 5795-8

Cat 1308



239 Shows fr. Aug Dec 30



70

71

Have George get $\frac{1}{2}$ doz assorted frames

~~Send day for following visitors:~~

~~Ayer's, Lowell, Suffolk Co. Mass. State, Biographies
Almanac, Boston, of Am. S. J. Hanks, N.Y. Writers
Ethos, Longhams, 351, Beacon, Mercantile Agency, 744
Gen. Lemmon's Bureau
mar 11, 1876 — 5 copies~~

Buffalo courier march —

Buffalo Commercial Advertiser Mar 14

Chronological Journals - February!

Rochester Evening Express mar 16. 2 Cps

~~Conservation Commission Nov. 18, 1878~~
~~do do " 11, 1878~~

~~Shaw's law firm must be closed~~
about may 8

Get binding books. Small Rubber rings.

Go. sure to graphic office sure) Friday.

Lord Carr. Capt. & Miss. ~~Quaker~~ Thompson
 Route. ~~Postage~~ for Capt. & Mrs. Maudslayi North Wales.
 44. Capt. & Mrs. Maudslayi North Wales. Adams
 St. James's Place. Capt. & Mrs. Maudslayi North Wales.
 Capt. & Mrs. Maudslayi North Wales.

~~Get 100 ten H. G. worlds of 29th — see over~~

Get Caribbea monthly 6 copies for April
 & send to Sir Maxwell, Govt. House, Seville &
 Schellen, Longwood,

Get Popular Science Monthly for April & send to
 Hartley, Sir Maxwell, etc.

Get to Milnes & Rogers 38 Beckman Street
 & get 6 London N. 14 Graphic Mch 16/188

Send London Weekly Graphic to Capt. Gordon
 Pender, Orton, General, etc. etc. & Pender

Get 12 Daily Graphic of Sept 1st & send
 Rep. 14 for Sir Balthazar

Get Frank Ellis Budget of June containing artists
 on Photography

Get Daily Graphic Apr 2. 1878 65 copies

Daily Graphic Apr 2. 1878 sent to Pender
 Sir James Thompson, Pender, Seville, Com. de Mexico
 Hartley, Seville, etc. etc.

Phil. Envyng Telegraph - J. J. Adams, Pender
 Pender, etc. etc. sent

Get a Little Book (copying house)
 and mounting book and letters

Michael, Pender, etc. etc. etc.

Get 12 New York State Zeitung
 Thursday Apr 4th

Philadelphia Times Apr 2. 1878
 send to

G. H. Pender, General Editor, James Adams,
 E. F. Gibbels 165 Race St. Cincinnati O., H. H. Pender,
 F. D. Macas, Sir W. Thompson, English Mechanic 31 Saville
 St. Covent Garden London E.C. Telegraphic Journal London

Send State Zeitung to General Editor of Zeitung,
 Sir Maxwell, Schellen, Seville, etc. etc.
 Sir W. Thompson, Sir W. Thompson, etc. etc.
 Approved on day for Sir W. Thompson Hart
 manager N. 9. Home's Phil. Office

Get 12 Commercial Subscribers of Sept 2. 1878

Send for 2 doz cards for telephone from
 Phillips of Providence immediately

Phil. Envyng Pender Pender, Sir W. Thompson
 Sir W. Thompson, General Editor, etc. etc.
 Sir W. Thompson, General Editor, etc. etc.

Get 12 Daily Graphic Mch 16/188

April 12th Sir W. Thompson Pender & etc. etc.
 Sir W. Thompson will be home Saturday & etc.
 should be glad to see him

Get 12 Home State Zeitung papers
 & Pender will see you when to send
 them

W. S. Credit Batcher's account with
 Cash to Munnings & Co. 1902
 Cash to Telephone (Utility bracket) 1/50
 Cash to Telegraph Express & papers 61 1913

Order to E. C. Munnings

12 Graphies Apr 1 - 60

3 2 15

Orders to New York 150

2 Munnings & Co. 50

10 Graphies Apr 2 50

10 Munnings Mar 24 40

10 Starting & ending 36

Consignee 12

for Munnings 25

M. C. Munnings 59

52.5

Send Phil Times
 "Herald" London "The American London"
 Dr. Cunniff, Brown & Co. Manchester City
 "Industrial Herald"

Will - make up Dr. to Cash from Adams from
 old pen Co. account. \$212.04
 Batcher

Will send to J. H. Blair & ask him to send
 in 12 Chicago Dubuques of Wednesday
 Apr 3

Send and get Cincinnati Commercial
 for Wednesday Apr 3 12 copies
 paid stamps for same of 4/10 cents
 they will take them

Will George to get 25 Graphies tomorrow if Adams
 postpaid is in

Send the Graphies of 6th to
 France, Quebec, Village, Santa, Adams
 Thompson, Canton Mass.

Send the Graphies of 2nd to

Spokane, Minneapolis, San Francisco, Santa Fe, Oregon
 to Munnings district for Washington D.C.

Send the Leitungs to

Frederic De Cange, Cologne, Belgium, France

Prof. F. C. Guillemin, Cologne, Germany

C. L. Madsen, 16 Springfield Ave., Copenhagen

Dr. H. C. Madsen, Copenhagen

Will George not to get any words of Apr 3

Credit my A/C. Batcher Co.
 Telephone / Utility bracket 750
 Express - 50
 1.25

Apr 10 2 AM

Will - Credit my account with
 Paper & express. 4.49
 half phone & half telephone

Send Graphies after meeting to

Credit my A/C. with Cash & Adams
 Munnings 1902

~~Send Graphics to
Hess, Plucke, Hoffmann, Adams
Peters, Schmitt, Ziegler, Hartwig, Schmitt
Kreutz, Thompson (Hoffmann's name is not in the list)~~

~~Send Franz Kiep. same as above except Kiep.
Hess, Plucke, Hoffmann, Adams, Plucke
Hess, Hoffmann, Ziegler, Hoffmann, Schmitt
Adams, Hoffmann~~

~~Will credit my A/c with
Check to S.A. for 16.75
24.17~~

~~Will credit my A/c with
Cash to Edison for
Personals 24.20~~

~~Will credit my A/c with \$9.93
Cash to. Papers etc
Half tel. half phone.~~

~~Write to (Chicago Tribune) Exp. for 25 copies.
Write to Mrs. Fick him to get them & charge
to Edison~~

~~Write & get Cincinnati Commercial
Apr 3 1895. 12~~

~~Get 100 New York Times of the 20 April~~

~~Will make me debtor to 107.
Cash from Edison check 25 + cash~~

~~Will credit my A/c with
4.50 for express
1.00 for telephone
\$1.50~~

~~Dr. Henry M. T. Edwards
L. Adams
Apr 15 17.50
2.50~~

~~Barman
Give B. credit for
Apr 13 Express etc 7.48
13 Adams Express 1.20
16 Papers 2.01 \$9.94~~

~~Apr 16 1895~~

~~Barman
Get 12 Evening Posts for April 16.
Receipt for me.~~

~~When the Philadelphia paper comes to me at Westchester
Send one of each to the following:
The Philadelphia 112 West 4th Street, Philadelphia, Pa.
The Washington & Annapolis, Washington, D.C.
The Baltimore & Annapolis, Baltimore, Md.
The New York & Annapolis, New York, N.Y.
The New York & Annapolis, New York, N.Y.
The New York & Annapolis, New York, N.Y.
The New York & Annapolis, New York, N.Y.~~

~~Paste the Evening Post article to Campbell~~

~~Two lots of Philadelphia paper will come to B.M.
at Westchester send one of each to all your names
and keep track of each for me. Re: Adams
You will have to send up for them tomorrow~~

Apr 17/98

Carmen credit my account with
Cash Brown 100/100
Cash & Sun 100/100 for Monograph
\$21.20

Carmen credit my ac with
Nepes
Nickel plating 2.00

Set day for slaves Silver Ayers & Lornlund
1. J. Shanks NY Customs then Douglas Mercantile Aug 20th

Carmen credit my ac with
Monograph
Martin coplan & Phelan

Car. Komer
Soma 30

Post Paid 10/100 Apr 19. 7/100/100
\$12 339 Paid Acc

Marks Evening Star Apr 19
\$1th 10/100 Apr 11/100

Car Batchelor 222 Papha

Car N^o Carmen 25
E. Wood

Send to A. H. Parker for 20 Copies of
the Post & Union of 1878.
also 20 copies of Star of 18.

~~Car. Batchelor (Papha)~~
~~Spun Arabic~~
~~Car. Batchelor~~

Send Batchelor 20 copies of Star of 18.

25 copies of Evening Star 25 Apr

Get = A Book called -

An Etymological Glossary of nearly 2500 English
words in common use derived from the Greek
By Edward Jacob Bayce M.A. Rector of Houghton
Hault. London George Bell & Sons York Street
Covent Garden 1878.

Send for Dr Van Nostrand. WC

Apr 26

Carmen: write to Sullivan's Journal
and get No 130 for July 1867 2 Dimes
containing article on Itacolumite or Jointed
Stone

Carmen

Credit Batchelor with
Apr 25 - Cash & Labor (Fogel) \$12.33
" " Station (Labor) 2.50
" " Nickel plating (Hephon) 58
" " Neurophysiology (Hephon) 1.60
Total 17.01

Notes

160
154

Send Large Photo to Dr. M. Rheinthal
 Boston University, Cambridge

Apr 29.

Barman

Make Balance Cr. to

Shipping for Shop. 2.40

Smuggles etc for (telephone). 1.24

Paper etc for express. 2.00

(Shop) Black ink 6.00

Exhibits 11.94

144

Barman

Have George get 20 Graphics
 of Tuesday April 2nd 1st.

Send Photograph to Sir S. Notting

Send Photograph to Howard Brothers

Wholesale Print Co.

Send Photograph to E. H. Bailey, Plymouth N.C.

Dr. M. Rheinthal, 5th Avenue St. NY City

Supermarket for the New University

Barman

Credit my Ac with

Cash to House

Order to E. Karaman May 2nd Express 2.50
 1 Graphic 1.25
 1 Case 4.30
 Reg. Letter 1.30
 Cash for 1.50
 McKie Bell (Feb) 5.50
 277

Apr 2

Car to E. Karaman Kootsie 140

Car fare NY & Newark 301

Poker News 10

Shirt Sewer 371

Apr 3.

Barman

Credit Balance Account with

Cash to Baiting Brown & Sharp 11.20

14 M. Calc. for Photograph. 149

Cash to Rubber for telephone 5.66

Cash to Stamps paper etc 18.36

Barman,

Get 12 new and daily of Friday May 3
 and send them away.

Car 10. N.Y. 11.20 May 2

Car 2.15 May 2

Have George bring 1 team of the writing paper
 we have been using and we will order more
 afterwards.

Barman

Credit Balance with

May 1st Baiting for Telephone etc 149

Barman

Credit Balance

Cash to House for Paints 10.00

Cash to Baiting 3.50

13.50

2.38

Carrman

Credit Cash to

P. Bagman & C	475.00
C. F. Phillips	150.00
James Adams	100.00
Chas. Batcher	100.00
James Gallagher (Portman)	21.25
Mr. Shan.	134.59
J. Muesi	500.00
L. G. Stillman	67.98
F. K. Fitch	75.30
David Davis for house	125.00

1787.47

Carrman give Batcher credit for

George's exes.	45
Funeral	45
Bill G. Patterson	89
	<u>2.89</u>

Carrman Credit me with

Expenses for April	156
Days hit for car trip	276
Japan	60
Blow cost	60
Expenses	25
	<u>8.74</u>

Carrman Give Batcher Credit

for
Photography Cash to B. B. Boucher & Sharpe 466

Carrman

Credit Batcher with

Cash to Laborer (Muesi Known as) \$55.26

Carrman

~~George has brought scrapbook for a
scrapbook tomorrow.~~

~~Carrman Tell George I want him to get
the lot of my place at place out to me
if those low tables and I will give him
instructions how to go about making
it go.~~

Carrman Make Batcher \$55

Cash from Muesi 55.26

Carrman credit Batcher with

Cash to Glenn for
I will furnish what for. \$2.00

Muesi & Plum

Large Blotter & Rubberbands

Shaving Brush

Or to Carrman

May 22	Johns 30	and wife 17	Brookline 5	
	Car from 30	Bus 3	Horon car 5	92
May 23	Sum Paper 30	Casting 17	Arappa 5	56
	Brookline 5	Mass 30	Patterson 110	
	Estimote 5	May 30	Westbourne 20	200
				348
May 25	Change Manning	Freeman	\$200	

Can't be done with all articles
 Pending for telegraph 22. Can't be done with all articles
 Office of Woodbury, Boston 22.

Carman

Credit Batchelor

Saw Blades 1.29

Papers & tickets for George 1.27

Postal Cards 63

3.39

mu

Exp one hold of May 31st and

put in Serial book 2

Number of same date - 2

Make

Batchelor Debtor 1

Cash from Edison

10.00

Make

Batchelor Auditor's

Papers from Wilson & Co 4.50

Papers from Wilson & Co 1.00

Printed Hush 1.00

Serial 1571/1572 from Newark, N.J. 3.00

6.26

Charge Post Room \$100,

June 1. 1876

Scientific American & Sup

10 Copies of each

June 8

Journal Telegraph

40 Copies

40

Apr 16/78

June 1. 77

Credit Batchelor with

Cash to this bill 3.00

Cash to Martin's for copy 1.00

4.00

Cash Batchelor with

Cash to Patterson Bk. 168

Cash Batchelor

182

Sent North American Review - 60578

for April

Count on Moncel
L. H. Thompson
W. Fleming Jenkins
W. Schellen

June 1878

General credit Batchelor

Paper 1.79
Scrapplate & Hox. 1.08
George's expense 48
3.35

George's 1/2 doz. Scrapbooks for
Kum's size

June 7th 1878

Credit Batchelor

Cash to Kinesi for Expense 90¢

June 8th Credit Batchelor

Castings telephone 15
Sewer 39
Newspaper 2.55
3.09

June 10th 1878

George's

Get 5 Copies of the Graphic
for June 8th

June 11th 1878

Credit Batchelor with

Bill of Glassware (Chimney) 2.00
Paper and sundries 3.91
Rocks, jars, etc. 5.91

Debit Batchelor with

Cash from Edison 10.00

June 12 1878

Credit Batchelor

Cash RR fares 5.25
W. B. Lee 5.50
Cash & Geo for Mahan 6.00
10.75

June 13 for Batch

Laboratory ac. Patterson Bldg. 232

Telephone ac. Mahan 362 42 6.91

Telephone ac. East

East 2.10
9.01

Cr. Batch

Phone ac. 90

Scythian Plate 1.50

Get ac. Brod Book 1.00

46.1

June 1, 1912

Credit Batchelor with \$1.00
 Cash to Ch. Craig 1.44
 Cash to unknown bill 19.77

17 Credit Batchelor with \$8.34
 this bill

Cr. Batchelor \$6.00 for Steals

Credit M. & M. Co. with
 Cash to Ch. Craig -

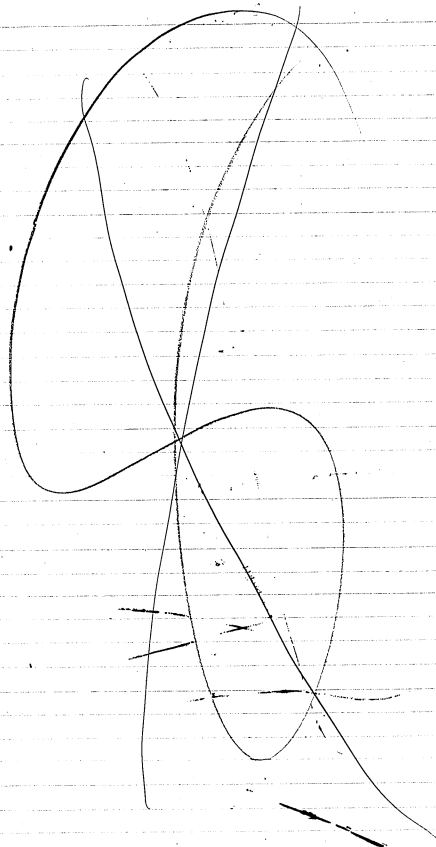
Credit ~~to~~ Cash with
 cash to Fred. M. M. 6.20
 " " Insurance 24.00
 " " Acct. from 28.22
 Asperken. for seed 2.02
 M. Carman (Cash) 14.80
 B. Butcher 62.84
138.01

Credit ~~to~~ ~~Batchelor~~ this bill 1.00

Credit ~~to~~ ~~Batchelor~~ 1.24

Credit Batchelor with \$10.34

Find out if M. Baughman paid anything
 on Crocker bill and make cash credit
 to Crocker for amount



June 19th
~~Credit Batchelor with \$12.00~~
~~of sundries~~
 OK me

June 20th
~~Credit W. C. Maffey Co with~~
~~Batchelor for \$100.00~~
 OK me

June 21st
~~Credit Batchelor with~~
~~Cash with cash~~
~~2 \$100.00~~
 11.25 OK me

June 24th
~~Credit Batchelor with~~
~~Cash to (Batchelor) 2.00~~
~~Check to 2.00~~
 10.00
 110.00 OK me

Debit Batchelor with
 Cash from Edison 100.00 OK me

Credit Batchelor with
 Cash 4.41

June 22nd 1898

Debit Batchelor with cash from Miami
 for 100.00

Debit Batchelor with cash from Edison
 for 10.00

~~June 22. Credit Batchelor with
Expenses from Chicago \$1.38 Mr.~~

~~22. Debit Batchelor Dr
Cash to George from same \$0.00 Mr.~~

~~22. Credit Batchelor with this bill \$2.12 Mr.~~

~~24. Credit Batchelor with
Sunday \$16.14 Mr.~~

~~21. Debit Batchelor with
Cash \$0.00 Mr.~~

~~25. Credit Batchelor with
Cash to Edison .16.00
Cash to bill 1.06 Mr.
17.06~~

~~27. Dr Batchelor 9.24 Mr.
Int'l. 82.12 Cash ac't 100~~

~~June 29 Debit Batchelor with
Cash from Edison \$90.00~~

~~June 29 Credit this bill to Batchelor
minus Nurse's wallet. \$10.11~~

Will have opened a new account to Char'ls.
Nurse's Account look at it.

July 17. ~~Cash to Henry on Autograph Co~~
~~17.00~~

Cr Baur for 17 Express 26⁴

July 20th Ratchela Cr
 16th Cash & Autograph etc 6.94
 Cash to Baur 26⁴
 18th Cash & Express 5.86
15.48

July 20 Ratchela Cr
 Cash from H. V. Sel. Co 100.00
 Cash from the Shaw Co. 50.00
 on 9th of Aug 150.00

22 Ratchela Cr
 Cash to Baur 100.00

July 23 Ratchela Cr
 Graphic 4.10 ✓
 Autograph Hill 2.54 ✓
 Home Carpan 1.11 ✓
 Express 34 ✓
31.99

Be B E B — 86⁵⁰ Baur

24th Ratchela Cr.
 Telegram 25⁴
 1 Packet 46⁰⁴
71.04

Shaking Homograph Co Cr
 to Ratchela Cr 755.00
 Cash

25 Ratchela Cr
 Patterson Hill Review etc 1.20
 Intype 45
 Carpan Paper 44
2.39

231.40
 151.42
 82¹
 Cr Ratchela 151.96
 Cash Express 151.96

27 Char Ratchela Cr
 to H. V. Sel. Co Cr 100.00
 to B. P. Photo Co Cr 50
150.00

27 Char Ratchela Cr
 to Baur Express 5.00
 Express 5.00
 cr Baur

28 Baur Patterson 45
 Photo Car 10
55

July 26th June 26.78
 3.10.10

24 for Batcher with 140
for Zoro a/c

not signed ~~July~~ - 29. 2 Copies

July 30

Chas B.

Cash from 2 telegrams

\$60.00

Chas B.

for

Cash to Hurray

\$60.00

July 31

Batcher Dr

Cash to Hurray for telegrams

\$8.15

Charged from Hurray

Aug 1

Batcher Dr

Cash from G.T. & Hurray

\$500.00

Batcher Dr

Cash to Hurray for telegrams

\$1.00

Cash to Hurray for telegrams

\$24.00

" " C. J. Adams Dr

\$6.00

" " G. Cassman

\$10.00

" " W. M. Hurray

\$50.00

" " James Adams (Batter)

\$25.00

" " Chas Batcher (Knap 149)

\$100.00

\$215.00

Hurray Dr to

\$10.00

look over this a/c

Carefully

Make G. Cassman

Dr to

\$10.00

Aug 1 Batcher Cr.

Hobson choice tile

\$5.60

Stinson tile

1.49

graphics

3.25

Helado

1.25

Capers

1.44

Aug 2 for Batcher

\$12.8

over coal

Endurance June 29

July 6

Aug 2 Credit Batcher

charcoal paper

\$1.05

by Geo.

Aug 3 Credit Batcher

Alpine

4.01

Wool etc

2.1

7.01

Aug 3 Credit Batcher

Cash to Labor (Griffin)

12.00

Aug 3 Debt Batcher with

Cash from W. U.

\$100.00

Cash from C. S. Rhine

57.00

\$157.00

Aug 5 Credit Batcher

Cash to Labor (Rhine)

\$80.00

Aug 6.

~~Credit Batchelor~~~~Labor~~~~\$40.00~~~~Exp. for sundries in New York~~~~1.85~~~~\$ 61.85~~

Aug 8.

~~Credit Batchelor~~~~Exp. for (John King)~~~~25~~~~Exp. for N. Y. (Holt)~~~~1.85~~Aug. 9 ~~Exp. for sundries in New York~~~~1.10~~~~7.50~~

Aug 9.

~~Batchelor Dr~~~~2. Exp. for travel + sundries~~~~\$ 11.00~~

Aug 10

~~Batchelor Cr~~~~Cash to Mr. Carlson (Hessing)~~~~5.00~~~~" " 4.00 for Nat. Co~~~~15.00~~~~" " 1.00 for Nat. Co~~~~18.40~~~~" " 1.00 for Nat. Co~~~~2.40~~~~" " 1.00 for Nat. Co~~~~8.55~~~~" " 1.00 for Nat. Co~~~~1.00~~~~" " 1.00 for Nat. Co~~~~40~~~~" " 1.00 for Nat. Co~~~~1.85~~~~25~~

Batchelor Dr

~~Cash from N. Y. Tel. Co~~~~\$ 100.00~~~~E. S. P. Co~~~~200.00~~~~300.00~~

Aug 12.

~~Batchelor Cr~~~~Cash to Labor~~~~\$ 100.00~~Aug 13 ~~Dr~~~~Batchelor Dr~~~~Cash for sundries~~~~\$ 400.00~~

Batchelor Cr

~~Cash to Mr. Carlson~~~~\$ 50.00~~~~Cash to Labor. Guffin~~~~10.00~~~~Cash to Labor. Hines.~~~~5.00~~~~\$ 65.00~~

Batchelor Cr

~~Cash to Brown + Coe~~~~\$ 50.00~~

Aug. 14

~~Batchelor Cr~~~~Cash to Labor~~~~\$ 5.00~~~~Hines + Carlson~~~~5.50~~

IN

20.15 IN

54.85 Labor

75.00

Aug 15 ~~Batchelor~~ G
 Cash to Stock 250.00
 E. S. P. H. Co. 200.00
~~Balance 50.00~~

~~Batchelor~~ Cr
 Royalty to Batch 95.00
 " " Adams 25.00
 Cash to Griffin (Lab) 40.00
 " " Chas. Egan 5.00
 " " American News Co. 6.00
 " " Geo. Carman 20.00
 " " Manning Hanna 100.00
\$301.00

Cr Wm. Carman
 Balance Ex. on Phon. \$2.00

Aug 20 ~~Batchelor~~ Cr
 Cash to Batch 54.50
 " " to Carman 20.00
 Cash to Matt. Digger .80
 19 Expenses at Newark .80
 19 " " Newark etc. .45
 19 " " M. B. P. .80
 19 Cash to J. W. S. 96. 120.00
\$196.95

Aug 19 ~~Batchelor~~ Cr
 Cash from E. S. P. H. Co. \$50.00

20 ~~Batchelor~~ Cr
 Cash to Linton Lige \$5.00

Aug 21 ~~Batchelor~~ Cr
 Expenses at N. Y. & Newark
 Horse stabling & N. Y. ticket for
 Fore. C. B. M. F. G. C. 4.60

22 ~~Expenses~~ ~~Magazine~~ & ~~Leon Bank~~ 22.50
7.10

23 ~~Batchelor~~ Cr
 Cash to M. F. P. Company & to ~~Batchelor~~ 50.00

~~Chas. Batchelor~~
 to S. H. Tel. Co.
 2 sets. Telephones ~~Batchelor~~

Aug 24 ~~Cr~~ ~~Batchelor~~ ~~Sampson~~
 E. S. P. H. Co. 50.00

~~Batchelor~~ ~~Hunny~~ (and) 2.00

Aug 25 ~~Batchelor~~ Cr
 400 yd. Lining 35.00
 Horse Car 10.00
 16.00
 1.40

~~Batchelor~~ Cr
 Cash to ~~Batchelor~~ pictures 1.50

43412

28 St. Lawrence 1868 100

~~Sep 2 Per Bachelor~~
~~Public Land - 1⁰⁵ Acres~~

Sept 4

~~Credit Batchelor~~
~~Cash to Labor Dept (\$10.00)~~

Sp. 3. Sektor Aa 30. April

~~Genl A. R. H.~~
~~James Adams~~ 50
~~St. Louis~~
~~Pro Mrs. Adams~~

~~Mr. Owen Batcher with~~
~~Sept 10 Sundries & George~~ 45
~~" " " "~~ 39
~~" " " Griffin~~ 80
~~164~~

~~Sept 13 Exp. Ac~~ 125
~~" " " "~~ 25
~~150.00~~

~~16 Car W. E. Mfg~~ 200

~~Charge Hotel Ac~~ 13.00
~~John M. M.~~ 27.00

~~17 Cash Batcher ddn~~ 10.00

~~18 " " " "~~ 80

~~19 " " " "~~ 100.00

173
 37
 230

~~16 Car Knives~~
~~Exp. Plummer~~ 353
~~Exp. Plummer~~ 118
~~" " " "~~ 30

~~Car Batcher~~
~~M. E. R. R. Ac~~ 100.00

~~17 " " " "~~
~~18 " " " "~~
~~19 " " " "~~

~~20 " " " "~~ 878
~~21 " " " "~~ 1578

~~Sept 24 " 1845~~
~~Batcher~~
~~Exp. of George~~ 12.00
~~Sundries & George~~ 1.00
~~4.30~~

~~Oct 1~~ 88
~~210~~
~~60~~
~~270.00~~

~~Oct 1~~
~~Batcher~~ 50
~~Batcher~~ 50

~~Oct 2 B. Knives~~ 100
~~Exp. Ac~~

~~Cash from B. E. C. Co.~~

Oct 1 B. E. C. Co. To Cash 15.00

Oct 3 B. E. C. Co. To Cash 4.00

8 Cash To B. E. C. Co. 14.00

~~Oct 10 B. E. C. Co.~~
~~Cash from B. E. C. Co.~~
~~14.00~~

~~Oct 10 B. E. C. Co.~~
~~Cash from B. E. C. Co.~~
~~14.00~~

Oct 10 B. E. C. Co. To Cash 25.00

5 B. E. C. Co. To B. E. C. Co. 18.44

Oct 10 B. E. C. Co. To Cash 13.00

18.44

Oct 11th 1895

Batchelor Dr

Cash from Edison

Batchelor Cr

Stammus seeds etc

Oct 14th

Batchelor Cr

Bill of Patterson

21st Express

21 Bill of Patterson

Oct 25th

Batchelor Dr

Cash from Edison (supp)

Batchelor Cr

Freight

previous freight

Bill of Patterson

26

Batchelor Dr

Batchelor Cr

26

Batchelor Cr

Bill of Patterson for 500 seeds and pay

Nov

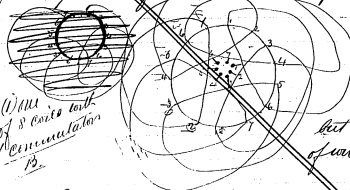
Cash from Kruze 8.00

— Orders to be filled —
1879—

No. 1.

Received March 1 1879
~~One Patent Office Model for Edison's New
Dynamo Electric Generator.
These 2 pieces, one full machine, one
separate of coils and one of the armature~~

*(See W. Hall
Model of 8 coils with
commutator
B)*



~~The model of
armature must
be wound round
on this principle
but with only one layer
of wire~~

~~Coils on Shell connected as in sketch~~

~~Feb 22 1879 Batechelor~~

2.

~~One Electric Fan made to be driven by a
Gramme ring as shown in drawing No 2
of this date. See Book 25. (about middle of book.)~~

~~Feb 22 1879~~

~~Feb 26th 1879~~

~~Batechelor
Johnson~~

3.

Received March 1 1879
~~One Patent Office Model of New Electric
Lamp with three of wire in vacuum, glass
ring filled and with platinum wire or iron and
platinum insulated by some such substance
as acetate of manganese. Model shown in
sketch marked order No 3 of this date.~~

~~Feb 22 1879 Batechelor~~

4.

~~Eight (8) carbon buttons and one 4 1/2 bottle
of Black all sifted ready for pressing to be
put in cases and enclosed in tin for Barrett
& England~~

~~Feb 22 1879 Batechelor~~

5.

The Patent Office model for preparing a sheet for duplicating started by writing on a sheet with a soft point the said sheet lay on a plate resting on its surface immediately sharp point.

Feb 22 1849 Batecher
Feb. 24th 1849 J. Knudsen

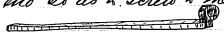
6

Make two 2 New Receivers in Walnut boxes to be used ~~only~~ as receivers

Taken by ~~to~~ ^{to} ~~England~~ ^{England}
Feb 22 1849 Batecher
Feb. 28th 1849 J. Knudsen

7.

Alter the Large Magneto machine in the following particulars:-

1. Make new packings underneath the bearings and do well both the bearing and the packing — ✓ ✓
2. Make new shell as shown in drawing marked order No. 7 of Feb 16, 1849. Shell to be 7/8 thick and have 3 german silver rings inside & stiffen it each & thick by 1/8 in length. This shell must be wound with (49) forty nine complete coils of wire as in drawing marked No. 7 B. The shell will be cut in for with 106 divisions but 8 of these divisions will be occupied by 4 feathers which run all the length of the shell the other 98 will be occupied by 49 and bottom of the 49 coils.
3. The feathers must be wrought iron and turned up at the mid so as to screw to the large casting as 
4. Large cast iron shell must be bored larger to suit wire shell and have the feathers grooves cut in it.
5. The commutator must be made with 49 blocks as shown in drawing marked 7 B.


6 Commutator brushes must be made of wire and bolt insulated from the shaft instead of as before one fast to shaft.

7 Connections from shell to commutator

8 Resistances of shell must be

9 Resistance of armature must be ~~to~~ known. This will be got by winding 16 complete turns of 16 wires round it.

10 A New Armature must be made in the following manner:- A solid cylinder of iron with wire wrapped round it in the manner of that on model no 1
 length 14 in.
 diameter 1 1/2 in.
 higher end



Feb 22 1899 / Batchin

Order 8.

Small Magneto Electric Machine

As shown in Drawing marked Order No 8. Also look at page 11 of Book No 6 for sizes of wire and armature.

J/2

Order 9.Gyromagnet

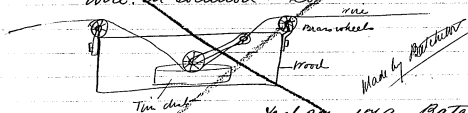
Mr. Russell on the Gyromagnet. There must
be 2 insulated coils and one connected to
the base each having bush.

The insulated coil must be connected to X



Feb 22 1899 Batchelor
March 30 1899 Russell

Order 10 Make 4 small troughs for covering
wire in solution



Feb 24 1899 Batchelor
Feb. 24th 1899 Russell

Order 11

2 Electromagnet Receivers to be
finished immediately. They will
come from Copenhagen yesterday

Feb 24 1899 Batchelor
" 24th " J. Russell

12. ① One model for new Receiver for
series to be sent over directly to done

Feb 24 1899
Batchelor
March 4th 1899
J. Russell

13

On ① Lime crucible for
Chemical Laboratory + fit inside of
a Graphite crucible
12" diam 3" long 1/4 hole in
Feb 21 1899 Balchelm
Feb 24 1899 J. H. Hines

14

250 Carbon Buttons W.C. Hefco. Feb 26.
Shipped April 17th 1899
J. H. Hines

15

200 Carbon Buttons Phelps Feb 27
Shipped Feb 27 1899 Balchelm

16

200 Carbon Buttons Bergmann Feb 28
Shipped Feb 27 1899 Balchelm

17

200 Carbon Buttons Bergmann Mar 3 99
Shipped Mar 7th 99

18

200 Carbon Buttons Bergmann Mar 10 99
Shipped Mar 19th 1899

19

200 Carbon Buttons " Mar 15 99

20

Make blowers for Chem. Laboratory crumblers
just as possible by putting on a larger
driving pulley to counter shaft & buying
blocks to hold the hangers.
Feb. 24th 1899 J. H. Hines

21

Please see after the apparatus in Charley
Hammers touch for telephones to put
right away. In order for me as I have
left instructions on paper. Feb 25 1899 J. H. Hines

22

20 Carbon Buttons R. Newell, Buffalo N.Y. Assn.
 Finished Mar 2 1899 P.S. m.c.

23.

100 Carbon Buttons G. S. Co. San Francisco
 Don't use Ray for packing between boxes
 any more March 4th 1899
 J.H.

24.

Get one Snow Phonograph (Pools) in good
 order Mrs. Edson wants to ship it soon
 as possible M.C. Feb. 27th 1899 J.H.

25.

Feb. 24th 1899
 Make rough box to show design of
 telephone box new receiver principle
 Finished March 2 1899
 J.H.

Mar 26.

Make one new telephone transmitter
 with adjusting screw 300 to the inch and
 a finger and plate screw to set it
 by.



Possible to set a screw

24

12 Carbon Buttons to Henry Bentley
 Price 200 sent by express B.
 Finished Mar 2 1899
 M.C.

Mod 1948

28.

1. One Model of ~~Wm~~ Receiver for Canada
 Feb 28 1949 Batchelor

29.

Make 1 New receiver telephone complete of
 wood just as we shall decide to make them
 Feb 28 1949 Batchelor

30.

Pax handle in iron pistol for Chemical
 Laboratory
 March 1st 1949
 Feb 28 1949 Batchelor

31.

Make 1 Improved Magueta telephone as
 shown in drawing marked order 31
 " March 1st 1949 Batchelor
 " 7th 1949 J.K.

32.

Alter Small Magueta machine as shown
 in drawing supplied No 8 by changing
 spaces all round to make
 an outside shell



Book 24 page 31

March 1st 1949 B.

" 6th " J.K.

33.

Alter Small Magueta machine as
 to rotate the top and hold the field mag.
 shell (drawing for) Book 24 page 33
 March 1st 1949 B
 March 6th 1949

34.

Alter Small Magueta Machine by making
 an outside shell of iron, winding
 wire round it, keeping it and
 the armature still and rotating
 the shell.



J.K.

~~As 40~~ Must be made to change diaphragms
 change for all known springs
 Change chalks easy 11

Packed with cotton on top & bottom &
 outside box with excelsior very crates
 arrived with one broken March 6th 1899
 J.H.

35.

After exp. 34 alter to rotate inner shell
 and amature cylinder together, Book 24 p 39.
 Batcher March 1st 1899 J.H.

36 Make an outside shell of rings of perma-
 nent magnets 2 inch thick
 this wants to work so as to rotate the shell
 Also rotate the amature cylinder along with
 shell March 1st 1899 Batcher

37 Make an inside shell of permanent
 magnets forming a ring and make
 so that you can either rotate the
 shell or the amature
 March 1st 1899 Batcher

38 Make a hand power drill a dynamometer
 in it for these small machines
 Book 24 page 38 March 2nd 1899 Batcher
 Finished April 15th 1899

39 Make one new receiver of wood same exactly
 as order No 6
 March 2nd 1899 Batcher
 Finished Feb. 8th 1899 J.H.

40

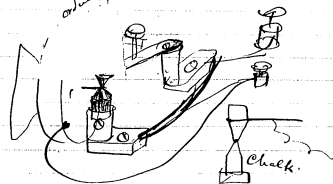
1 New receiver ~~same~~ as order No 6
 only pine instead of Walnut
 March 3rd 1899 B.
 Finished 13th 1899 J.H.

41

12 Portland buttons sent to H. Neatley
 Phil March 5th 1899 Batcher
 Arrived Feb 13th 1899
 J.H.

Order 42

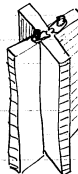
1 Transmitter

along Transmitter
Telephone

March 4 1879 - 020

1/2 inch long Finished J.H.

43



Make

(40) forty resistance Cords. ^{notary public} _{NY.C.}

Body of wood (pine) like sketch
1 foot long and 4 inches across the
corners. 5 adden the two ends
to binding posts that will take No
8 wire and which are fastened to
two blocks between which a cut out
plug will fit

Mch 4 1879

19 J.H.

44

Make Electric Lamp as shown on sketch 10 H.P.
for JohnsonMarch 6 to 1879
J.H.

45

Make Patent office model about 1/4 size. like
brass photograph of up flame base showing
in back of page 210 showing wrong. when mounting
move up & down also point on a stand 1879 J.H.
over Finished March 12 to 1879 J.H.

46 Make one ~~made~~ Patent office model like
Order No 12 for the Service

March 6th 1889

" 7th J. K. Mearns

48 Make a mould for ~~order~~ rollers for the Service

March 6th 1889

Finished March 6th J. K.

49 Make a mould ~~same~~ as order 48. To mould
lampblack

March 6th 1889 J. K.

50 Make a Carbon ~~stripping~~ apparatus (Drawing marked 1638)

March 6th 1889 J. K.

51 Make (4) four ~~make~~ lamps of castiron

March 6th 1889

Finished 27th J. K.

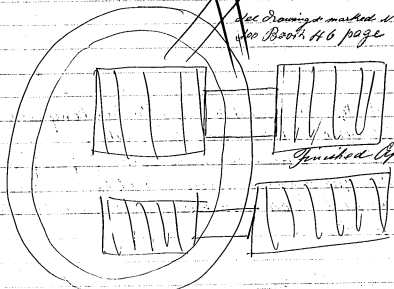
52 R. Service 1 ~~Drum~~ 1 ~~Drum~~ 1 ~~Drum~~ 1 ~~Drum~~
displacement of order 22. 20 Castiron Buttons

J. K.

53 Make one ~~make~~ Machine

Will make a sketch

See Drawing marked 1633 A & B.
See Book 46 page 145.



Finished April 12th 89

J. K. Mearns

24 1 2 5 6
24 1 2 5 6

Order for Order 58 30 lb of #15 Com. Co. copper wire
 wire must be .075
 Order 10 lb of 18 Sw. Co. Cy. wire .049 thick.
 bare wire

58

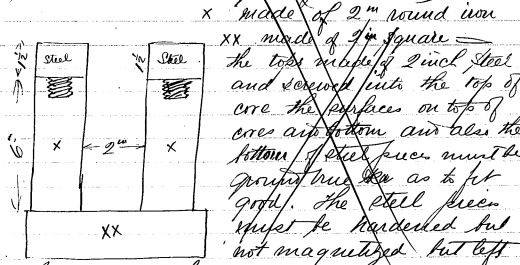
The shell of this must be 6 1/2 inches long and wound with 25 coils, the wire I will designate.
 The armature must be made as:-
 a wooden pul on shaft wound which is wound about an inch thick wire (var) and then the shell filled in this See Book 16 about middle



54 Make 12 electric lamps as shown in Book No. 4
 page 195

March 10th 1899 J.H.
 17. J.H.

(55) Make one Magnet (Permanent)



for one to do that

Batchela Mch 10th 1899

56 12 W. Electric Mfg. Co. 200

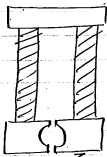
Carbon Button

(55) Shipra March 12th 1899 J.H.

57 near 18. W. E. Mfg. Co. 300

Carbon Button

58 Alter small magnet machine by taking the shell and putting it in between two principle poles.



Put the machine on the wooden base used by my induction magnets before & fasten down by 2
 See book 46 108 page
 Complete Test April 12th 1899 Batchela

59. Take the cores from the two large induction magnet upstairs, and unspool the wire, and cut the cores to same length as the magnetizing magnet we use for magnetizing; also take one of the backs and drill another hole so as to put the cores $\frac{1}{2}$ inch apart, ~~then~~ wind on each core the same amount of the same size wire as there is now on the magnetizing magnet.

March 13 1879 Batchelor
 BT finished March 13 1879 A.

60. Take the bar of iron that comes to-morrow 13 foot long and cut it in two & make a magnet of it. This is an experimental.

March 13th 1879
 J. H.

61. Make springs for Westograph received ^{typed} with the following:

- | | | |
|-----------------------|----------------------------------|-------------------------|
| 1. Battle metal | 2. Bismuth | 3. Gold |
| 4. Aluminium | 5. Copper | 6. Pure iron |
| 7. Antimony | 8. Sulphide Lin | 9. Lead |
| 10. Sulphide Lead | 11. Silver | 12. Tin |
| 13. Sulphide Antimony | 14. Sulphide Bismuth | 15. Sulphide Zinc |
| 16. Brass | 17. Carbon (Cane) | 18. Peroxide Iron |
| 19. Silicon | 20. Rhodium | 21. Palladium |
| 22. Indium | 23. Bismuth | 24. Magnesium |
| 25. Gallium | 26. Chromium | 27. Manganese |
| 28. Nickel | 29. Cobalt | 30. Ruthenium |
| 31. Selenium | 32. German Silver | 33. Zinc |
| 34. Peroxide Lead | 35. Plumbago mixed with dextrose | 36. Arsenic |
| 37. Cadmium | 38. Tungsten | 39. Plat. Iridium Alloy |

These springs must all have the same bearing surface and must be marked plainly.

March 13 1879

As far as metals are on hand, Finished March 19th 1879 J. H.



62 March 13. 1879. ~~See request of Mr. Briffen~~
 100 Carbon Buttons for E. S. Gads Some from
 Love & be sent to Mr. Wisconsin Pugherry agent
 W. W. Delg las M. ~~Sent March 19~~
 J.H.

63 12 Carbon Buttons for O. B. A. & saved Pottery for
 Owen vs. ~~Prosser~~
 M. Lamm
 Completed March 18th 1879 J.H.

64 Make Small Engine in ~~fast~~ & arrange pumps & blow
 to run ~~proper~~ ~~spend~~ ~~in~~ ~~work~~ ~~of~~

65 Make 10 more ~~electric~~ ~~lamps~~ same as order
 No. 54
 Finished March 19th 1879 J.H.

66 Make ~~comutator~~ on Order Tardie machine so
 that it can be ~~changed~~ all around
 Finished March 18th 1879
 J.H.

67 Fix ~~Barometer~~ for Mr. Epton wanted it
 March 19th 1879 J.H.


68 Put two new binding posts on all the
 small resistance coils, made as as to take
 large or small wire. Make 10 extra
 plugs and be sure the holes are of the
 same size
 March 19 1879 J.H.

69 250 Carbon Buttons to W. B. Mfg. Co. Chicago Ill.
 Sent March 20th 1879
 J.H.

70 Send 200 Carbon Buttons To Phila

sent Feb 19th 1879

71 Make Electric Symploometrics after drawing
March 20 1879 J.H.

72. Make 8 suitcase boxes. Finishing sent by 1 foot
and five boxes 5 1/4 inches by one foot. Two of
the latter to be made to ~~have~~ three flaps and
two binding part, the ~~only~~ to have one flaps
and two binding part. Cut the grooves, so
that every alternate one shall be 3/16 inch deeper than
those cut to hold the wires simply. The grooves on
two five in by twelve four to an inch, on all
the others six to an inch. Make 10 holes 3/4 in
from outside edge on the boxes with three flaps.
On the other holes  near the base

March 21 1879 J.H.

April 5th 1879 J.H.

73. Make booklet for ~~Telegraph~~ Office for Telegraph wires after
drawing. I have it published March 21st 1879.
Finished 25th 79. J.H.

74 Make a sketch book for ~~Telegraph~~ Office after drawing
marked off March 25th 1879
Finished J.H.
April 1st 79

75 Make thermopiles
No book No 5 page 188, 131.

March 25th 1879

76 10 Carbon Buttons To H Bently Philadelphia
March 26 1879 no charge

Delivered March 26th 1879 J.H.

~~March 26th 1879~~

~~77 25 Carbon Buckets to H. J. Chester Boston Welp~~

~~Delivered March 26th 1879~~

~~J.H.~~

~~78 Make boxes of B. & P. Hoppers to fit a pair of our
old main shaft Hangers, must be so arranged that
they can be put back on B. & P. H. with shaft & all
at any time. The people with old boxes to old Hangers.~~

~~March 27th 1879 J. H. Russell~~

~~79 Pack Wheatstone Perforators & Perforator~~

~~Ch. March 28th 79 J.H.~~

~~80 Pack Water Tapping Ch. M. 24th 79 J.H.~~

~~81 Ship 250 Carbon Buckets to W. E. McG. Co.~~

~~Delivered March 27th 1879~~

~~J. H. Russell~~

~~82 Have Dress plan made for Grindles Vacuum Washers~~

~~M. 28th 1879 J.H.~~

~~83 Make mounting Stand for table for Chem. Substanting~~

~~Ch. M. 28th 79 J.H.~~

~~84 Make strong gas resistant table out of 2" pine
planks for Laboratory~~

~~March 28th 79 J.H.~~

~~85 Make working draft with Drawers for lab.~~

~~M. 28th 1879~~

~~J.H.~~

~~86 Drain off the water underneath the Engine room
cannot wait pipe from sink to it & lead it into
main drain. Clean drain of the water
from wellhouse which spoils pipe causing &
clogs off the main pipes~~

~~March 28th 1879~~

~~J. H. Russell~~

93 Make 24 more of the little lime bottles



for experiment

Bathelmer Mel. 31st 1899

J.H.

94 Make 3 more magnetizing Flasks for Geo. Rader

March 25th 1899

Fin. Sec. 31st 1899 J.H.

95 Draw three (3) pieces of pure iron (20)
twenty thousandths thick and each (10)
ten inches long.

Also -

(3) three pieces piece wire

Also 3 of copper & 3 of Aluminum

(4) four of nickel made as far as we had the
materials J.H.

96 Make a platinum sleeve on corrugated
diaphragm to hold a glass bulb.
Sheet plat. must be bent round and welded
as at a glass heat of glass blowing

Fin. Sec. 3rd 99 J.H.

97 Make Dist. App. for Dynamometer & put magnetizing
magnets on, make Dist. App. to resist 5 lbs of m.

Comp. App. 2nd 99 J.H.

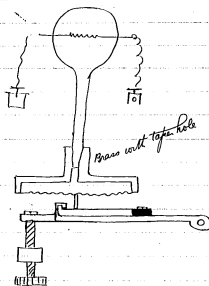


98 Send 1 Doz of wire buttons to Buffalo N.Y.
in brass box & with tags for report

Lat. App. 3rd 99 J.H.

99.

1 Regulator for lamp with anoroid plate



F. April 29, 1911.

Apl 3rd Bachelor.

- 100 B 25 & 24 ~~Make regulator in sets marked 104~~
Book 46 page 131. ~~April 17th 29 Jk.~~
- 101 ~~Make reg. f. E. L. ~~Set on B. 24 p. 12~~~~
~~Exp. 17th 1899 Jk.~~

- 101 Make reg. of E.L. ~~1884~~ on b. 24 p. 22
Orig. 16th 1889 J.H.

102. 1 Punch and die for lines $\frac{3}{8}$ diam. and
1ⁱⁿ long

Punct to be made on ~~Edison's~~ plan

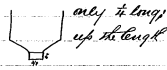
and a number of $\frac{1}{4}$ in washers & ma

furnished

Die to be made in three pieces

heavy cast iron ring
as per drawing by the

as per drawing by Kreni



Apr. 10th 89 J.H.

103. Apr 4. 200 Lewis Button
to Phelps - ~~see as possible~~
East - April 7th 99 M.

1044. Apr. 6. 1849.
Mr. Newman: Have the table ~~made~~ put up,
for press, and made a mould made similar
to the one taken by John Peterson for chalks.
I want to start a box pressing buttons for
the new receiver
John Peterson
April 6th
1849

- 105 Ink Patent office model for Edison's Pencil mark.
See Drawing B. 24 pp 33 & put April 5th 1879
On same base 2 safety patches as shown in March 16 J. P. Moore
pat March 2 1875. & Book page 84.

- 106 Have ~~Refractometer~~ muffle for muffle furnace
also a grate exp. Ap. 5th 1889
Fin. 17th " 2. H.

- 107 250 Carbon Buttons to W. E. Mfg. Co. Chicago
Sept April 4th 29 J. L.

- 108 Fix up the large ~~Ref.~~ screw & nut, lower guide & new strong table complete April 24/29

- 109 Inhib. experiment ~~Numbered~~ No 5 Book 1011
page 81 ~~to~~ regulates E. L. Cyp. 5th 29
2 B.

- ~~100 Make exposit. marked No 6 Book No 24 page
81 use spring of the above Apr. 5th 19 Jm.~~

- 111 *Grake regulator* ~~as shown in sketch marked etc 1~~
Book 25 page 31 Apr. 4 to 19 J.S.

112. *O. fiskei* regulator ~~shrub~~ with marked N.P. Boulder 25
page 38 Apr. 1915 1529 J.M.

- 113 Regulation No 3 B. 25 ~~marked No 3.~~ marked No 3.
Cep. H. 29
J.H.

114. 1x Carbon buttoning brass tube
W H Barr Elizabeth N.J. (4cc)
Released Sep. 27th 1964

~~NO~~ ~~Before 7.1.89~~

~~24 Locusts - Buttons of Menckens~~
~~Philadelphia~~

- 118 One doz carbon buttons in brass tube
J. Merrick & Co. Sept. 1894
Delinval Ap. 1st 1894 J.H.

- 1/6 one dozen Carbon ~~for~~ brass tube
J. Merriam Supp. Wm. F. Elg. Phila. Pa.

- 117 Make lamp after ~~11/10/11~~ in Book No. 4 pg. 200

- 118 Sent 100 ~~empty~~ Buttons to Pns. Guss.
Delivered Exp. 9th 27. J. L.

- 119 Make Platina Speed Springs for new
receiver $\frac{1}{2}$ to $\frac{3}{4}$ in. $\frac{1}{2}$ wide. Apr 9th 1899

Caustic Magnesia -

Iodide Compn - Hypooxide of Manganese - Hypo oxide of Lead

Plumbago (^{Heligolande} - Lampblack) - Powdered Galena -

~~the~~ oxide of Cerium - Aluminium -

120 10. Reconnect ~~Reconnect~~ to W. de Bree.

~~Reconnect to W. de Bree~~

~~Finished Apr. 11th 1914.~~

121 Make Bot. office ~~make~~ for S. W. Smith letter
April 12th 1914.

122 Make bushes for shaft of magneto-machines to fit
the hand wheel and put in wheel a handle so that
we can drive it ~~machine~~ by hand at any time
Batchelor Apr 12 1914

123 Send 250 C. B. B. to the W. C. App. Co

~~Delivered Apr. 15th 1914.~~

124 Make large counter-shaft for cone pulleys 3000.
2" cold rolled iron and put paper boxes to hang on
a flat iron base 10" pulley and double 5" belt.
Apr 12th 1914

125 Get new 24" pulley 14" face & drive B.H. Gunter
and 1 10" pulley for same 3" face
Apr 12 1914

126 Make 3 wooden winding cylinders for winding string
on for experiment; 1st and 2nd round



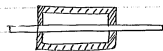
Ground with 98 ground so deep
the third & have 3 pillars on end & drive it by

127 Alter small Edison Fanatic so that it will
have 49 coils of wire in layers of
turns each.



Make new commutator with 49 points and
wind coil so as to be perfectly symmetrical
Bore off the edges of the plates so as the wire will not
catch in turning
the new commutator must be independent from the
cylinder.

New cylinder must have 1/2" shaft and the wood core must
be pinned through / spikes being driven on tight the
iron must go down to shaft as -
or down as I shall direct
further on



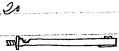
Apr 12 1914

Make addition to P. B. B. order 105

For 49 coils of wire

Finished Apr 12 1914

128 Make one a ~~for~~ for telephone new receiver



Finished April 15th 1914
J. B.

129 Fix up the Walnut ~~the~~ made for new receiver as
a complete telephone with transmitter and ear
See B. B. 22
Apr 14 1914

130 Make Thermo experiment see
Book No. 14 p. 245, 246, 249


April 18th 1914

J. B.

131 Make a complete set of parallel pieces
for Shop. also plates of bed of planes
& back for it. ~~Apr. 20th 89 J.H.~~

132 Make an Iron ~~stand~~ for chemical
Laboratory. ~~April 20th 89 J.H.~~

133 Send 200 Carbon Buttons to
W. E. Hagg Co. ~~April 21st 1889 J.H.~~

134 Pin Diagram machine that friction dynamometer
can be put on.  ~~April 21st 89 J.H.~~

135 Make a Dynamometer of wood

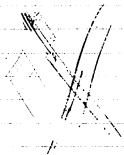


136 Make a lot of Splines for connections
to large binding. ~~Apr. 21st 89 J.H.~~

137 Grind faces of each and pass of Carbon
mould as ash of away with the
further edge in buttons. ~~Apr. 21st 89 C.B.~~

138: Want 6 Bottle Carbon for The Puck Co.
Delivered Apr. 22 1889.

139 Apr 21. 200 Carbon Buttons
manufactured by W. E. Hagg Co. ~~Apr. 24th 1889 J.H.~~



140

April 21 1899

Wind ² small Magnets (Pintors) with 17 coils of
30 wire making 10 turns resistance
and make 6 magnets 6 turns of
Cmpt. 18. Op. 20th 1899
J.H.



141

Alter the above so that it will be just like
an *Synchro*.



Cores 5 inches long

1 1/2" diameter

Wound with 3 layers of No. 10 B. wire

Wind the armature with 24 coils of 21 wire

4 turns to coil; resistance of armature 28 ohms

Cmpt. 22 " J.H.

142.

W. Dehewer B. and others apr 22. 1899

St. Carbon B. and others

W.C. Dehewer Op. 25th 1899
J.H.

143

Fix up one of the above Phonographs and pack
it for shipment. Op. 25th 1899
J.H.

144

Take small *Synchro* (Pp1) and make ~~an~~
a solid iron armature for a shaft ~~to be~~ ^{to be} ~~than~~
the pole and perfectly in the middle.
The armature must be exactly
the same length as the head.
I don't any gear wheel or it or commutator
C.B. Apr 29 1899



145

Take the armature that Flammar made for (us)
and take off the wire and fill up with fine wire that
George will bring to day. Wind the wire as full as the
Magnet head will allow
Apr 29 1899 C.B.

155 — 1624 examine ~~copy to G. B. Lord S. F. Cal~~
~~May 12. 1879~~ ~~May 21~~

156 Make ~~negatives after photo~~ in Book 25 page
 75 ~~May 17th 89~~
 J. H.

157 Make a complete set of Buttons for
 New Receiver ~~Telephone~~

158 W. E. Muff & Co. ~~May 10th 1879~~
 Do & W. Phelps — 100 carbon Buttons
 want them immediately
 May 18. 1879
 W. E.

159 ~~Do W. E. Muff & Co. must have~~
~~100 carbon per month after this~~
 W. E.

160 Make 65 ~~complete~~ ~~Telephones.~~
~~May 18th 1879~~

161 New Strong ~~engined~~ for Telephone
 rollers. See must be with in 3 parts.
 plunger & plate ~~May 15th 1879.~~

162 Blueprints for Edison wall battery
 Make 130 parts complete like sketch.



1. machine screw $\frac{1}{8}$ "
2. copper washer
3. $\frac{1}{4}$ " square rod $\frac{1}{2}$ " end long and $\frac{3}{8}$ " thread
 through it
4. 10 large copper washers so that it will not sink
 in wooden top

5. machine screw
 May 15th 1879 Paley

~~163 Make tin or copper diel 6" long
2" wide and 3" deep for boiling
the carbon in
May 19 18~~

~~May 20. 1879
164 12 ~~Edison~~ ~~Batteries~~ to new ~~eng~~ to
replace ~~for~~ ~~Edison~~ ~~R.C.~~
N.C.
fixed May 20. 1879. N.C.~~

~~165 Make P.O. ~~Model~~ for New ~~trans~~ Telephone
& ~~Edison~~ ~~mounting~~ for ~~Edison~~ ~~trans~~ ~~boxes~~
May 23 1879
Make P.O. ~~Model~~ for Edison's ~~Paradise~~
machine ~~make~~ 2" to a foot~~

~~166 Make a machine for ~~striking~~ the ~~shell~~
for New ~~Receiver~~
May 23 1879
Drawing by C.B. to book~~

~~167 Cut a mica ~~die~~ ~~lagan~~ ~~for~~ ~~Edison~~ ~~Batteries~~
with Mitchell ~~C.~~ ~~N.C.~~ as sample for supply
May 23 18 1879~~

~~168 Make 65 10 cell batteries for New ~~receiver~~
order
May 23 1879 Batcher~~

~~169 Make 65 New Edison ~~Telephones~~ ~~equipment~~
for ~~Central~~ ~~Station~~ ~~system~~.
May 23 1879 Batcher~~

over

140 Make central station switch complete
for 50 fifty subscribers with 12 exchange
strips as per sketch
May 23 1879 Batchelor

141 Wind me "drop" with 500 ohm resistance.

142. Make battery boxes for telephone viz:-

Walnut
1 box for wall & hold (1 battery and 1 LeClanche)
1 " " " (1 " and 2 " "
1 " " floor " (1 " and 1 LeClanche)
1 " " " (1 " and 2 " "
Apr 23 1879 Batchelor -

143.

~~Western Electric Co. New York~~
H.C. per Messrs. ~~Batchelor~~
New York May 22, 1879
350

144. Take measurements of Gram machine
See Book #6 page 158, 159

145. Make pattern for Jamponing bracket for
telephone ab. 22.7.79.

146. Send J. B. A. David ^{Batchelor} 12 A. buttons

147 500 Carbon Buttons June 27. 1879
500 more to free year when wanted by
L. B. Duncanson 100 Can

148. Make patent of model for ground
conductors ab. 27.79 J.B.

Red from Bergman pr. exp. May 5th 53 Telph.
Bridg. B. & H. pr. of 8-12 d. d. d.

1475
4475

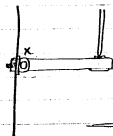
149 ~~OK~~ ~~Base bbl. & ship~~ ~~to Bergman~~ ~~June 10/19~~

150 H.O. Ryker Array ~~to~~ ~~Bergman~~

~~OK~~ ~~Carbon~~ ~~to~~ ~~June 7, 1919~~
V.C.

151 ~~W.D. Chester~~ ~~Hydrow~~ ~~W.C.~~
~~50 Carbon~~ ~~to~~ ~~June 5, if possible~~
~~June 5~~ ~~(V.C.)~~

152. Have a ~~spring~~ ~~lever~~ made like this:—
A solid bar with a stiff joint at X
made to ~~work~~ ~~hard~~ like our trans-
mitter arm



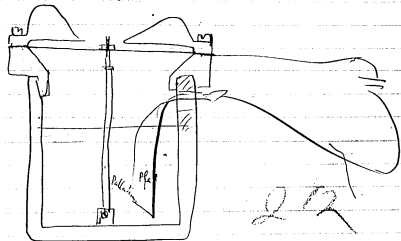
June 4 1919 C/B.

153 Have Hense turn up a (shank) of vulcanized
fibre saturated in kerosene Petrol for 6 hours
Shave given Lawson piece of fibre and he
has got it soaking and it is ready for turning
up
June 2 1919 C/B

154 Make thin ~~diaphragms~~ for all the
transmitters ~~for this~~ ~~order of~~ ~~telephones~~
June 2 1919

155 H.O. Carbons to ~~Bergman~~
my turn ~~within 2 weeks~~ ~~of date~~
June 5, 1919

July 20 1879



201

July 10.

2 barrel Drifts to Lakehurst
Hawley Resources Ky

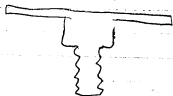
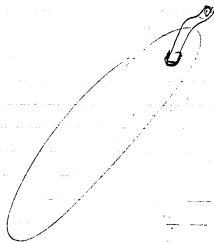
202 July 10th make two new boxes with diving
ashes new for & base for random & oil sec
Drowning!
for Drifts see book 38 173

203

make 4 more new boxes of rubber
& every thing to complete 4 new telephones.

July 9th 1879

204. P. 0.38 wire



A

B



204. Make 1 Standard Faradic Machine
for sizes of wire see 46 page 185 for Armature
on the cores put 3 layers of No 10

July 10 1899 C.R.

205 Make New Receiver with worm motion to drive
on the arm joint

July 10 1899 C.R.

206 Make New Receiver with clockwork motion
and fly wheel in best shape to be used in hand

July 10 1899 C.R.

207 Make 4 Carbon Transmitter like drawing
Book Page

July 11 1899 C.R.

208 Make 1 Patent Office Model as shown
in Book 46 Page 235 & Drawing 208.

July 11 1899 C.R.

209

Make an water transmissor see book 80 page 245

July 15th 1899 C.R.

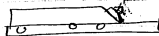
210 — 100 Buttons to Johnson with the
next shipment of telephones

211 Alter one of our bracket telephones to hinge top of
box, and put water diaphragm on with 3 springs
with rubber under them

71. Menlo Park July 25 1879

In Menlo Park July 25 1879

212 Make a platinum separator
+ get fine scales out
of the black sand
July 15th 1879 C.B.



213 Send with telephones to Johnson
50. Runways from above
learned by Britton

214 Do Louis (Lafayette)
Sherlock Flat
Britton Co. Sala
one Pony for given telephone

215 Do Lapae (Lafayette) for given
one broken telephone (Pony)

216 Alter 4 telephones for England to have
a coil in them of primary 40 ohms
Secondary 150 ohms Tertiary 400 ohms and
make a new box and base to suit them. hinge
the top of box so that we can get to transmitter
to adjust it.

Continued work 28 N 44 also 114.

July 18th 1879 C.B.
" 29th 1879 J.H.

217 Make one coil with primary and secondary
only but coil to be made one inch longer than
our regular coils. Turned with same wire
+ number of layers
July 18 1879 C.B. J.H.

Make one Patent Office model as shown in drawing
(marked 218 July 10th 1899)

at July 10th 1899

209 Make 100 extra chalk cylinder
on brasses, but let this include the
one that are sent away already as
extra.

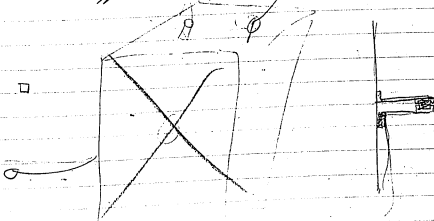
at July 23rd 1899

210 Dr. Marion D. Providence R.I.
12 Barbours St. Providence R.I.

311 The Dr. E. J. G. says we must
have a copy of the order as the order
has been sent to the printer.
Mr. E. J. G. has been sent
them and will be sent to you.

July 25th 1899

212 Make Patent office model for this Gamester



213

Make an Ore concentrator, iron pan 12" diameter, double

Blank shaft $\frac{3}{4}$ " from center to shaft.

belt motion, shaft to water pipe

1 $\frac{1}{2}$ " in. apart $\frac{3}{4}$ " - Ring
 $\frac{3}{4}$ " from
center to
1 $\frac{1}{2}$ " pipe
July 25th 1889.

Johnnie

214. July 29th #1198 - Telephone order.

Mr. Hines -

The four inertia telephones with small Jablochky
candle carbons on your desk are all right
and may be packed immediately.

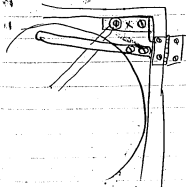
The four Bergmann transmitter telephones on
Flammie's bench must have new boxes on,
with inertia telephones of thick mica and
connection strips spotted to diaphragms. They
must have a rubber mouthpiece from the
Bergmann telephones screwed into the wood so
instead of turning the wood into the shape
of a mouthpiece.



In all the instruments you pack, put a
little watchoil in all working parts.

Do not address any to Parkas

Make a small clamp in copper for clamping
the connection strips as:



as as both put both the wire from
hinge and strip from diaphragm on
one screw but make plate X & screw to
the golden hinge wire to & have
clamp washer at end to fasten strip

over

I think it would be best to platinise the hinges just where the springs touch in order to insure good connection.

Put a spring on one chaff with Palladium ~~20~~ twenty hundredths wide and flat so that it makes a track on the chaff that wide. and see that all the springs on the other three make tracks as wide as themselves.

In the unita telephones make jacking candle buttons and make them thus: -
rounded at both ends



215 Make 10 telephones complete like order 214

OK. July 31 1899

216 500 Carbon Buttons to Dr. Dickinson immediately

OK
Countermanded

217 12 Carbon Buttons HQ Bents, Phil Pa

OK

218 Make 13 telephones complete like order 214

OK. July 31st 99

219 ~~App for Price of wire for ind. cards~~

~~.005 for Primary~~

~~.010 for Second~~

~~.057 for Primary~~

~~220 - 6 (Exp) ^{Aug 12-1899} Co. No. 1 Buttons
Washington D.C.~~


221 ~~Sec about 64 Tap~~

222 ~~Wind of lb. ill. magnets with 3 layers
of it 18 miles
& Immature with 6 turned 4 layers
of it. 24 single Aug 17th 1899
JLH~~

223 ~~200 Buttons to
of Hensley Buffers NY
W.K. Smith~~

224 ~~100 Buttons to W Union
Buffers stock
OK sent m.c.~~

225 ~~2 doz Buttons
to Pittsburgh Pa~~ ^{sent} OK m.c.

225 Figure out the mile for new Pacific Road.
 And also. Structure to be named three miles
 together 4 layers with 2 turns. & the last with one
 turn do  19 mile - 0.42. Dinner
 Aug. 25th 1899
 J.R.

226

175 barrels Buton
 AP length Sub
 702²³ Calane

227

6 Carbon ~~Barrels~~
 70 J. J. Morrison
 W. E. Porter
 Georgetown
 U. C.
 soon as possible

228

500 barrels ~~Carbon~~
 To California
 800. C

229 Make 500 Telephones.


Aug 15th 1899
 J.R.


230 Prepare Large Pacific road. et al.

Sept 12th 99
 J.R.

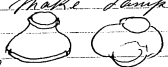
6.9

7.26

231. Make an other Gowing m. motor &
also in the following manner
Armature $1\frac{1}{4}$ " more. Diameter 18" longer.
~~increase the~~
Field 4 layers instead of 3
Armature 6" ~~instead of 4~~
Keep field magnet same. 6 layers on armature same
size wire, make brushes to Sept 12th 1899.
Touch on top & bottom so  J.H.

232. Repair Paraffin motor No 2.
Take 7 of the iron wire off & replace it
finer, new brushes to touch so 
fix commutator, etc. Sept 12th 1899.
J.H.

233. Fix a lathe head for glass blower
to grind Sept 12th 29. J.H.

234. Make lamp stand to hold
 different shades & electric
lamps. Sept. 13th 99
J.H.

235. Make a Goshawk Telephone
a.c. to Gowing Sept 15th 99
J.H.

236. Make an electric motor for
lamp regulator Sept. 15th 99
J.H.

237 Make a Telephone recor. with a
4 inch Diaphragm J.H. Sept 13th 29.

~~238 Make a new Die for Chalks for New. Press
1 1/8 Diameter & plugs 3/4 long Top & Bottom
3/8 so as to have an entrance for them of
3/8" Sept. 13th 29
J.H.~~

~~239 Make a new finishing mould for
E. L. Chalks. Sept 13th 29
J.H.~~

~~240 Make a set of plugs for line
mould for E. L. Sept 13th 29.
J.H.~~

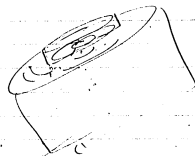
241 Design & make a cheap little
lathe for Johnson to turn
the chalks of the Top by hand.
holds stationary. Mandril with large
collar on end to set the tool by.
Sept 13th 1889.

J.H. McKee

242

Make a new carbon Transmission
for English Telephone order
Sept 20th 29
See Drawing J.H.

718



J. Egan's contract in Book No. 16.

243 ~~W. E. Hill~~
 Mos. Orlow, 22 W. 1st St. Chicago Ill.
 500. ~~Leather Buttons~~

~~Some possible D.C.~~

244 ~~130 Buttons~~ ~~W. E. Hill~~
 D.C.

245 713 A David Pittsburgh Pa
 24 Carboys Buttons sent Oct 11-10-8

Oct 15th 1899
 246. Make a Chalk mould with hole
 in diameter for Johnson London

Oct 15th 1899
 247 Make a Chalk mould with hole
 in diameter for Paris France

Oct 15th 1899
 248 1 Left handed telephone

Oct 15th 1899
 249 Make 50 extra chalk bases for experiment

Oct 15th 1899
 250 Make 15 more large chalks for Johnson

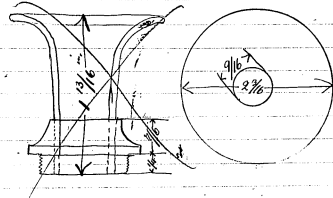
251 200 Carboys W. E. Hill N.Y.

*Position for Bureau
weights for telephones*



Bank

252 Oct 17th 79 Make 2 rubber mount
pieces



253 100 Carb. Buttons 10 boxes
W.H. Supply Report.
taken in by order Oct. 21 79

Oct 21
254 Telegraph Supply House Co.
Cleveland Ohio
12 Carbon Buttons n.s.
4x8 order

Oct 31
255 M. D. Wood, W. H. Co. Kansas City Mo.
2 Carbon Buttons n.s.
4x8 order

256 T. W. H. Co. Chicago Ill.
500 Carb. Buttons
W. H. Co. Shipped Oct 22 1879

257 Oct. 28th 500 Rubber Buttons to
Chicago Ill.
Shipped Oct 28th 79

258 Oct 28-1879
1000 Carbon to W. H. Co. Chicago

259 Oct 28.79
12 Buttons to Tele. Supply & Clearing Co. Chicago

W. Kuezi

260

Instrument No 124 and 137 have been
sent to Bentley
Instrument No 134 and 149 have been
sent to Barber of Philadelphia

261

These Instruments will not come back
again so you had better fill up the
numbers for Johnson
Also find out what numbers the four
instruments Mart took were and fill
them up.

Batchelor

262

Make an arrangement to break the
circuit of the Magneto Faradic machine
quick & to connect the same to the bridge
thus



Oct. 25th 1899 J.L.R.

263

Wind the spring m. motor with double covered
wire put on as much of it as possible for commutator
so that the motor will start at any point

Oct. 25th 1899 J.L.R.

264

Repair Carbon in ~~the~~ Oct 25th 29 J.L.R.

265

Get Steam bath in Chemical Laboratory
to draw better and repair it in general
Oct. 25th 29 J.L.R.

266

Have the Vault finished that
it can be used Oct 25th 29 J.L.R.

276. Make 100 extra Slaves for Walkers
for London. Nov 4th 1829.
J.R.

Nov 4th 1829
277 Pack & Ship the Assort Slathe To
London, also 100 Chalks, 1 Saw with ~~iron~~
Arbor, 1 Rethroag, 1 Arbor with hardstone ends for
Chalk Slaves, 1 gauge for Chalks, Two Drawers for Chalk,
Tools, 1 improved geared Churn Whitens Patent,
6 Brushes new & used for wetting Chalks.
12 Bells of solution 8 Lbs each for
slide rest. J.R.

No 1 remade.
278 Make the armature of Faradic machine
No ~~23~~ 3. So that there is only .010 space between
copper wire & magnet or binding wire &
magnet. Wind it with .035 copper wire
Double covered as usual, one layer
H. turns, 75 commutators

279 Make 12 morden lamp standers (polished)
with 2 Bindingposts on each.



Nov 5th 1829
J.R.

Diameter bore in face 9.21875

Diameter core — $\frac{.156}{9.062}$

$\frac{3.14}{36.248}$

$\frac{90.62}{271.86}$

Circumference 150) $\frac{28454.68}{1.80}$ (189)

$\frac{13.48}{12.90}$

$\frac{175.4}{1.89}$

4 (1.89 inch for each coil

.04725 for each wire

Wire .035 .035
Covering .012 .013 The wire with .013_A covering
probably be fitted in. $\frac{.047}{.048}$

Thickness of wire .048

From wire to hold .010

Play $\frac{.020}{.078}$

Tooth $\frac{2}{.156}$

Total on both sides

Resistance of one strand No. 20 wire once
round the machine (Total 20 turns) Machine $\frac{1}{16}$ the
Four strands $\frac{1}{8}$ ^{one} machine = .125 ohms

No. 2 machine 468 turns

No. 1 remodeled 75 or $\frac{1}{6}$ the No.

No. 2 machine .625 in between coil of

iron and face of armature

No. 1 remodeled .256 in $\frac{1}{4}$ the distance

No. 2 500 revs. 110 Volts

No. 1 Remodeled 750 ~~revolutions~~ should give 110 Volts

Nothing is allowed here for heating or for irregularity
in the iron core.

Nov. 13.

About 4 lbs of wire needed

No. 1 remodeled.

280 Take the armature from No. 1 machine
and change as follows.

Make Commutator with 75 divisions

Make new vulcanized fibre ends ~~9.218~~ inches
in diameter 9.062 inches in diameter.

Wind the iron core with fine iron
wire, well oxidized if possible, this must be
done so that no part has a larger
diameter than 9.062 inches and all as
near that as possible.

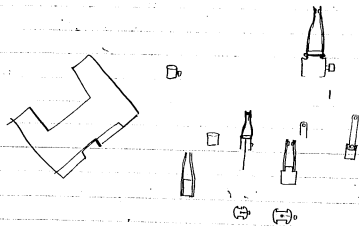
~~Wind the ~~iron~~ armature with one layer
of No. 20 wire .035 inches in diameter.~~

~~Each coil will consist of two wires
wound twice round and will make
the machine have about $\frac{1}{2}$ the resistance.
The wire will be held in place by
German silver or.~~

Wind with one layer of No. 20 wire
.035 inches diameter double wound .013 in covering.
Four wires side by side one turn
in each coil. Groove the outside edge
of vulcanite fibre so as to hold the
wires in place that as they are carried
to the commutator blocks. ^{or steel} Hold the
wire in place with .010 iron wire in
the same manner as in No. 2 Machine.

Dec 8 This machine was well made
and gave 48 Volts!!! OK

100 B. 34 of Chile



280.

Make 2 bases and put letter clips on them to be used for writing on
to be put at the right hand of telephone
Nov 9th 1829.

281.

200 Carbons for H. D. Dwight Suppl
Doronto Ont.

Invoice must go in box for notice
Nov 11th 1829.

282

12 Carbon Buttons for H. B. Bonty
Chilean P. 1829.

1/2 Doz. 20. notices to be given

283

500 and 1000 (Photographs to be given
Bras. Philadelpia Pa.

284

Make 8 Wooden mouthpieces
for Chili Telephones

2 Tram wrenches

2 Receiver "

2 Adjust pins

Chalks 1 Bras Carbon Button Box for 240.

1 Chalk gauge.

Nov part in box 34 page 54
Nov. 15th 1829 J.H.

285

Make a line shaft for
H. Gardie machines & fix up
a nice & clean room for them
put a partition across the shop.

(See Book 79
page 202)

Nov. 15th 1829 J.H.

Nov. 18th 1899

286 4 Relay instruments and bells
complete to be delivered to
J. F. Bailey.
Passenger Steamship "Germanic"
to be put in Stateroom 55—

287. Four new metal pieces for order
286.

288 10 pairs of clamps for Electric Light
Nov. 19th 99 J.H.

289 Twenty pair clamps for Electric Light

290 15 Nutwashers/Chucks
Western Electric Chicago
Immediately J.C.

291 500 Carbon Buttons
Western Electric Chicago
Immediately J.C. Nov 21st 99 J.H.

292 Make 25 wooden lamp stand
Same as 299 but a little heavier
when lamp goes in see Batchela
about it. Nov 21st 1899

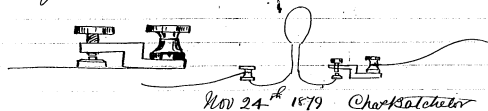
293 Make 2 more carbonizing mounds
for paper same as made before
Nov 21st 1899

294 Make 30 more pair clamps for Electric Lamps
of mod. size wire Nov. 23^d 1879 J.H.

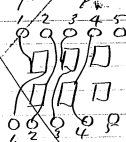
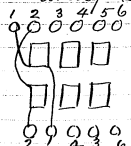
295 Make a clamp to cut paper for Elec. Light
des. Drawing for. Nov. 24th 1879 J.H.

296 Alter Paradié machine to 3 To a 1/2 ohm one
Make new Piece ends and get it to run with the
least amount of space between armature & magnet.
Nov. 24th 1879

297 On the wooden lamp stands that
Andrew is making put a pair of platinum
points &c.



298 Fix 4 Switchboards and charge
time to Bergman. They are connected
wrong so they ought to be 1-



Nov 25th 1879 Nov 26th
I have written Bergman about it.
Chas. Batchelor

~~299. Make 50 pair clamps for lamps~~
~~Nov 27 1899~~

~~Order flat wapper 2.160 x .025 one turn~~
~~Nov 29~~

~~300 Make another clamp to cut paper~~
~~for lamps but to clamp with~~
~~screws as:~~



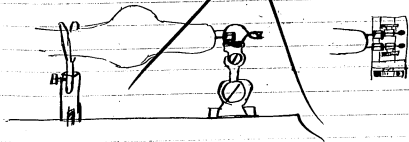
~~Start Bradley on it~~
~~right away and~~
~~never mind the~~
~~disorder~~

~~Never mind~~

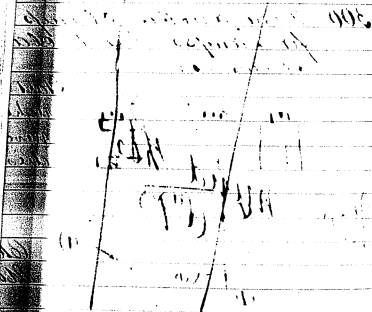


~~Chat/Balchela~~
~~Nov 30 1899~~

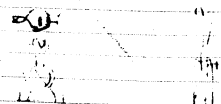
~~301 Make an instrument for receiving~~
~~the clamps and holding the clamps~~
~~whilst patting in the loop.~~



1000 lbs. of iron wire
1000 lbs. of iron wire



1000 lbs. of iron wire
1000 lbs. of iron wire



302 Make fifty more clamps for electric light
Dec. 20 1911 J.K.

303 Alter the electric light motor
Dec. 20 1911 J.K.

304 Make 4 Glass blower tables with balance
same as the wooden one in use
Dec. 20 1911 J.K.

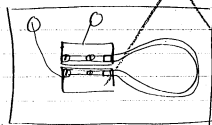
305 Make 4 Carbonizing Chambers of
wrought iron
Dec. 20 1911 J.K.

306 Have street lamp posts made &
make street for same Dec. 20 1911 J.K.

307 Send 100 Dollars to London
with next list of expenses
Dec. 20 1911 J.K.

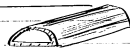
307

Dec 10th 1899
 Please make an instrument for
 measuring resistance of carbons



308.

Have 12 muffs
 made for us.



309

Send 500 Carbon Buttons
 to Western Electric Chicago Ill
 (Order record photograph) Dec 10th 1899 J.P.

310

Send 2 of Bergmann's Telephones
 to U.S. Printer Washington DC.

311

Order 22 lbs of Copper wire coated &
 compounded covered .035 diameter for #3
 Sent Dec. 12th 1899
 J.P.

312

Send 1 lb of #3 4-layer wire by size with
 to .035 diameter for #3 4-wire together
 Dec. 12th 1899 J.P.

313

Peri out the hole for armature
 9.62 inches in diameter

313. Make No. 4 with ~~plate~~ ^{9.62 inches bore of magnets}
 9.62 inches bore of magnets
 Make armature 9.05 diameter of
 wire wire
 Wind 4 layers in three of .042 wire
 39 coils in wire in width
 the same as No. 2
 Measure carefully when made.
 Make madder at 6 1/2" diameter order f. M.E.
 314 Make one carbonizing chamber out of a
 Patent Hanson Battery Carbon
 finished J.H. Dec. 15th 1899

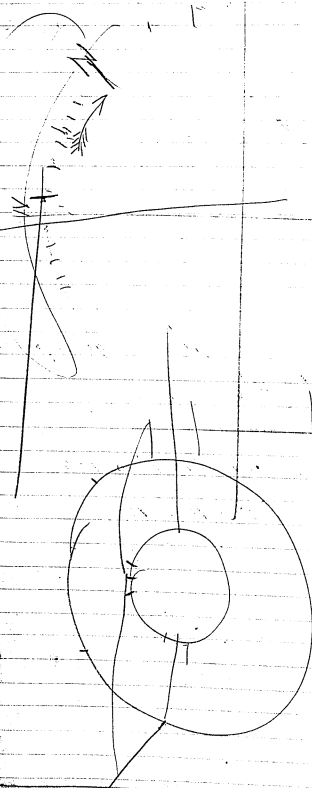
315 - send 500 carbons to
 Dr Elec Mfg Co. Chicago, Ill
 Shipped 14th Dec. 15th 1899 M.E.

316 Please make 200 platina clamps
 for lamps like previous ones.
 Dec. 16th 1899

317 Please get some .015 platina wire
 for lamps
 Ordered 14th Dec. 16th 1899

318 Send Buckeye Engine Pump to Dr. J.H.
 Dec. 14th 1899
 J.H. Dec. 14th 1899

Drop
 Chap.



399 Make a Pouchet Circumference of inside circle
2.81 width of side of Loop .025 Diam. of inside .894
outside .944

17 Leavenworth, Kansas
E. P. Dwyer, Leavenworth, Ohio
Mar. 1921
Dwyer, L. K.

I Faradic machine No. 4

I Faradic machine No. 4

II 100 Lamp cups

III 100 pair of Lamp Clamps Platinum

gear up pumping motor

V Switch for Central Station regulator

VI fit up 15 Double burner Chandeliers

VIII fit up the motor complete

VIII 10 Street lights

IV Double board side walls on the spars
to Depot.

X get Kerite wire for Street Camps.

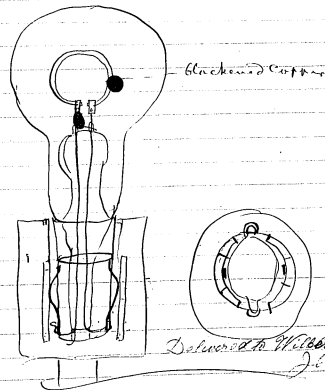
XI Central Station cleaned
oil clothed & fixed up.

Dec. 20th 1849
JLH.

322 2 Chalk Instruments for
James M. Cross. Richmond, Va.

323 2 Chalk Telephones for Mr. Major N. B. Co.

324 - Patent of Model.



325 — 24 Carbon Bistones
H. Bentley Philadelphia Pa.
Dec 27. 77 Finished Dec. 27 J. H. W.

Jan 7

Sent 50 Leadrop Buttons to

Manager of W. H. H. Co. ~~East Pa~~

Ohio Pa

me

Shipped for express May 20th 99
 1st. Road machine. Marbad.
 Leggett & Co. N.Y. for Arctic exp.
 2nd in same box & battery for
 Baxters engine B. & H. 11600 bar
 & 1400 ft. of No. 11 B. Apparure
 also 35 ft. of 4 in Batt & 50 ft. of piping
 & Photo graph. Iron and iron make
 made as a model

May 21st 1 grate bar pattern per exps.
 to C. Currier to cast 10 P.

May 22nd 99. 300 E.S. Carbon plants
 delivered at Francis H. Leggett for
 Arctic expedition.

250 Carbon Buttons to Ch. Ill. May 26th 99
 May 26th 99. 1 Empty Gasoline Mt. to Dicks

May 27. 350 C. Buttons to W. E. Mfg. Co. N.Y.

May 27. 600 with Batteries to Bergman

" 24 250 Carbon Buttons exp. Chicago

" " 12 " " " Pittsburg David

" 31st 1400 four mod. & fifty C. Buttons W. E. Mfg. Co. N.Y.

June 2nd 50 Carb. But. to Boston
 3 1400 " " Bergman

" 8th 160 " " Chicago

Sept 1 Complete Telephone to Bergmann given
by Delmon

Oct 2^d 2 Complete Telephones for Models
to Bergmann No 53 & 54. & one extra
transmitter.

Oct 3^d 2 complete Telephones to Roster for
London. Nos 32 & 40.

Oct 4th 1879

Make 2 Boxwood or Mahogany mouthpieces
to drawing of M^{rs}. made this day
Baicheln

Oct 5th 1879

Ship to London 12 Telephones
No. 55 56 57 58
29 33 29 26
46 43 35 24

Also with them 3 Electrotypes

Shipped Oct 6th 2 AM. J.A.

Oct 7 1879 Ship to London by

2 men going on Wednesday

4 Telephones No. - 59. -

60-61-27 Shipped J.A.

Oct 7 Delmon to Mr. Bailon at their
shop in New Church St New York

② two new telephones -

① one transmitter -

Oct 9th Ship to London 23 telephones²³⁵
as follows.

No. 62, 63, 64, 65, 66, 67, 68,
69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81,
82, 83, 84. . . Shipped Oct 9th 3 PM
J.A.

~~Make a left hand instrument (Telephone)~~
~~Delmon set.~~ Oct 10th 1879
J.A. McKee

Oct 15th 79

Shipped to London
35 Telephones. as follows:

No. 85, 86, 87, 88, 89, 90,
90, 91, 92, 93, 94, 95, 96, 97, 98, 99.
100, 101, 102, 103, 104, 105, 106, 107, 108, 109,
110, 111, 112, 113, 114, 115, 116, 117, 118, 119

Oct 28th 1879 Shipped to
Arnold White 11 Queen Victoria St.
London Eng.

36 Telephones. Numbered: 166, 139, 128,
130, 124, 156, 113, 136, 129, 138, 135, 148, 131,
132, 163, 152, 146, 147, 155, 153, 120, 162, 141,
122, 126, 168, 158, 159, 164, 161, 157, 151, 144, 140,
169, 165

Also six Telephone Scrap books. To E.H. Johnson.

Boxes marked Arnold White 11 Queen Victoria
Street E.C. London
care of Haymarket, Paris
J.A. McKee

Nov. 18th 1889 To J. D. Husbands Valparaiso Chile S.A.
Care of 81 Chambers St. N.Y.

6 Complete relay telephones, 1 complete South board,
100 Carbon Buttons, 15 Chalks without sleeves, 5 Chalks with sleeves not
turned, 2 Chalks on sleeves finished not used.

6 Wooden mouth pieces, 3 extra composition mouth pieces,
6 Binding posts complete, 3 rubber springs, 3 steel spring washers,
2 Transmitters Diaphragms, 3 " " pins, 3 Boxwood rings,
2 Receivers " " 1 Top piece platinum for Transmitter,
3 Balance connections of Transm., 1 Receiver spring, 2 glass,
3 Transmitter adjusting screws, adjustment of telephone screws & washers,
4 Key buttons, 1 Mouth handle, 2 Receiver washers,
2 Transmitter washers, 2 Chalk washers, 2 adjusting pins,
3 complete Push buttons.

Numbers of Telephones: 182, 177, 173, 180, 174, 180.

OKDC J. H. Francis

Nov. 20th 1889.

Shipped 25 Bergmann Telephones To London
Nos 526, 526, 531, 523, 523, 525, 532, 538, 536, 520, 528,
531, 532, 534, 531, 543, 533, 533, 535, 535, 527, 517, 536.
& 100 Chalks. P.R.R. freight J. H. Francis

Sent 4 Complete Relay Telephones not numbered
To J. F. Barclay steamer Germania Charley Nov. 28th
J.H.

Shipment of Telephones for London
Nos 558, 568, 567, 562, 537, 556, 546, 516, 516.
557, 520, 539, 521, 522, 535, 540, 542, 560,
524, 542, 513, 514, 519, 525, 586, 529, 522,
~~541~~ 541. Bergmann's all (24) four South boards.
" 218, 216, 160, 216, 220, 222, 223, 221 of
F. A. Edwards 120 Pushbutton springs
120 square headed pushbutton screws with platinum
points Shipped freight J. H. Francis

1382
23
4146
2764
31166
311
1382
286
11054
3764
311

A
 appears to be an
 arrangement for
 using Stearns
 Differential to
 branch offices.

It requires 3 wires
 to the branch offices.
 (The same thing can
 be easily effected
 with 2)

C
 This instrument
 was ~~been~~ in
 operation in
 the N.Y. W M of
 2 months or
 more ago—

1384
22
2764
2764
3040

1382
2
1384
1382

Shipped Nov. 29th to London 29 Telephones.
Nos 596, 591, 563, 603, 572, 571, 530, 578, 574, 574,
575, 585, 544, 591, 545, 599, 597, 587, 571, 581,
601, 569,
154, 221, 145, 222, 219, and one postage from
Mr. Griffith

J.R.

Shipped to London freight 21 Telephones
Nos 545, 618, 609, 634, 614, 624, 702, 616, 613, 688,
246, 261, 260, 241, 231, 255, 239, 235, 243, 238,
265

Also 100 Bricks and 2 Stripped Boards

Dec. 9th 79 J. H. Menden
10 Bergman and 11 Collins -

Shipped to London 4 Cases - 24 Telephones
Nos 252, 256, 248, 254, 244, 247, 252, 247, 259,
245, 257, 229, of ams and
691, 689, 635, 685, 704, 668, 653, 663, 695,
716, 680, 625, of Bergmann's
Dec. 10th 1879 J. H. Menden

Shipped to London freight Dec. 13th 79
56 Telephones, 96 Bricks, 4 Stripped Boards & Ship Board
Nos 237, 240, 253, 228, 234, 223, 233, 242, 258, 266,
293, of ams and
632, 613, 584, 681, 619, 617, 710, 679, 627, 628,
669, 698, 674, 636, 656, 641, 680, 623, 672,
647, 637, 684, 706, 605, 700, 579, 610, 632, 533,
642, 696, 694, 675, 705, 676, 683, 614, 708, 646,
678, 622, 615, 620, 693, 677, of Bergmann's

Done 8. Dec. 4. 1879

56
45

1382
45
6310
52190
J.R.

$$\begin{array}{r}
 234\frac{1}{2} \\
 \hline
 1178 \\
 1638 \\
 \hline
 1234\frac{1}{2} \\
 \hline
 409\frac{1}{2}
 \end{array}$$

23

409

3500
2400
1000

Dec. 16th 2 bbl. 3 cases AM 11th.
 I Shipped to London (as freight & V. G. J. H.) per Davies
 No. 664, 671, 686, 712, 686,
 264 271, 284, 256, 272, 275
 and 1 case with 2 bbl. boards 2 bbl. with 2 bbl.
 95th.
 II 639, 709, 665, 811, 737, 697, 670, 694,
 227, 289, 273, 291, 280, 270, 281, 276, 285, 288
 287, 282, 283, 274, 292, 277, 290.

Dec. 26th Shipped to London

650 733 218, 731 735 741, 811, 805 798 813
 742 795, 784 816 229 776 722 760 773 727
 774 758 746 768 734 801 806 775 800 761
 684 781 764 866 770 732 778 692 728 644
 745 792 739 648 725, 2 of Bergmann
 279 288 286 269 250 225

15. 2311 - 1898 J.H.

Dec. 29 To W. H. Painter Washington
 2 Telephones No 580 & 662
 from Chicago to Paris
 Bergmann sends in multiple Express. J.H.

Jan 30 1880 Shipped per Davies
to London

125 Bells (wood) 86 Bells. & the
 following No of Telephones: 779, 639, 714,
 709, 780, 286, 629, 903, 893, 819, 724, 791, 814
 608, 755, 661, 282, 744, 631, 787.

J.H. OR

155 20/10

June 9/1877

Foreign Addresses

1. Argyll Duke of London Eng?
2. Alfred Alfred Professor au Lycée Fontaine 9 rue de la Harpe Paris
3. Adrien Charles Del observation Lyons France
4. Adams J. Paro H.H. Place Hotel de la Harpe London Eng?
5. Bell A. Graham Prof. Physicist London Eng?
6. Beethle Col. Geo. 9 rue de la Harpe Paris France
7. Breguet M. Electrician Paris
8. Blavier E. & Co. Eng. Paris
9. Baudry J. C. de Fontaine Electrician General
10. Cully R. J. Electrician London Eng?
11. Clarke Latimer
12. Crookes Prof. Chemical news office London
13. Darcy E. J. Boy Court Ludgate Hill London Eng?
14. Deschanel A. Privat Physicist Paris
15. Electrician The 396 Strand London W.C.
16. Everett J. D. Physicist Queens College Belfast Ireland
17. Ferguson Prof. Glasgow Scotland N.B.
18. Gauss Col. Geo. 2nd 6 Lombard St London
19. Hughes David E. Prof. Physicist London Eng?
20. Huxley M. Electrician Paris
21. Huxley T. H. Prof. London Eng?
22. Higgins M. Exchange St. London Eng?
23. Jenkins Fleming Prof. Edinburgh Scotland N.B.
24. Jones Henry Rudolph Acoustician Paris
25. Lachy J. Norman Prof. Spectroscopist London Eng?
26. Lindsay Physicist London Eng?
27. Le Monde Electric Paris France

James M. Adams
Case Mary F. 214/16
1149 Strand London
June 15/1877
The 6th

Transferred to Small Book June 22/77

28. Maxwell Clerk Prof. J. Cambridge Eng?
29. Marcel du Coud Paris France
30. Murchison A. Electrician London Eng?
31. M. Lachy J. Norman & Jensen 55 Chancery Lane London Eng?
32. Nottage Esq. 54 Chancery Lane London Eng?
33. Puckner Mrs. Lachy 1149 Strand London
34. Poca W. H. 214/16 Strand London Eng?
35. Playfair J. Lyon London
36. Dr. Richardson London
37. Raligh Lord. "
38. Sprague John T. Electrician London
39. Stewart Ralfus Physicist "
40. Schellen Prof. Cologne Germany
41. Smith Willoughby Electrician London
42. Stroumoff
43. Sabine Robt. Physicist "
44. Spangolotti C. E. Electrician "
45. Spettensmide M. Physicist "
46. Simons G. W. "
47. Tossandier M. Physicist Paris France
48. Tait P. G. Prof. Edinburgh Scotland N.B.
49. Tindall John Prof. London Eng?
50. Thomson D. W. Glasgow Scotland N.B.
51. Varley Cromwell F. Electrician London Eng?
52. Walker C. V. F.R.S. London
53. Zetzsch Prof. Dresden Germany

~~Domestic:~~

~~Samuel Edison Fort Gratiot Mich
 Geo H. Blair 220 Kinzie St Chicago Ill
 T. B. A. Davis Pittsburgh Pa (occasional paper)
 Mr McKenzie Spirit Files Wash DC (occasional)
 Ed Johnson Washington Navy ("")
 Mrs Menden Page Milan Ohio
 Mr P. Edison Port Huron Mich
 Prof Geo F. Barker University of Penna Phila
 Henry M. Bentley Local Tel Co Phila Pa~~

Transfered to
 Small Box

~~Franklin H. Badger Care Fire Alarm Telegraph Montreal Que~~

~~Troy Photograph P. B. Harris~~ ~~Long Beach 20 Oct 2 1894~~

~~Charcoal John H. Anderson
 P.O. Hayaville Jackson Tenn
 Ocean Co. N.J.~~

Address:-

Porter, C. Bliss 40 Seventh Street New York.

Saturday June 7, 1878. Mailed the Franklin Inst Journal, April 1878, to the following addresses

Prof Schellen	Prof Tyndall	Alfred Angot	Sir W Thomson	Prof Helmholtz
Prof Stewart	" Ferguson	Ernst Munk	Chas Andre	U Meisner
Mrs Parker	" Lotzsch	Prof Huxley	Geo S Gouraud	
W H Keizer	W Smith	Lathams Clark	M Spittes woods	
D E Hughes	M Hardy	Prof Crookes	Robt Sabine	

Saturday June 8, mailed Mr. Tribune containing letters ^{repts of progress} and two minor
to the following addresses

Price	Prof Schellen	Huxley	Walker CV	Hardy	Spagnoliotti
Sir W Thomson	Geo D Hodge	Tyndall	Franklin Fleming	Brownrigg	Spittes woods
Mr Laker	Fitzgibbon	Charles Lathams	Tait Prof	Looney	Lord Lindsay
Beetz	Adams	Simmons	Ferguson Prof	Higgins	Lord Kelvin
Count Dr Munk	Chalmers	Varley	Biquet	Sabine	Prof Bell
Chalmers	Angot	Andrie	Crookes Prof	Wittigly Tindal	Barlow Mount
The Electrician	Uggle	Blauwer	Ernst	Cully	
Koenig	Darcy	Le Monde Illustr	Tindal	Spagnoliotti	
Prof Helmholtz				Rayner	W Richardson

Monday June 10th Sent Washn^{gton} Star of April 26th 78 to following
Spagnoliotti - London Times - Gouraud - Sir W Thomson & Electrician
Baudry Paris

Monday June 10th Sent Prof Barker Journal July June 15th 77 (Presence relay)
also Washn Weekly star, April 26th 78

Thursday June 13 Sent J Baudry Editor Fontaine Journal of Electricity
City of Herald (June 14 doing well interesting) Graphie (Paris letter) Tribune (Lyon letter) and
Washn Weekly star April 26.

Friday June 14th Sent Scientific American of June 22nd to all addres on pages
271 & 272 - from 701 to 703 inclusive and to full list of addresses mail box

Sunday June 16th Sent Kd Journal June 15th 77, Presence Relay to
Prof Helmholtz - Baudry Seabrooke Mr Carnelly "Belge"
Proctor Browning Treve

June 17
also sent my letter to Seabrooke June 17
" " Washn Star " "

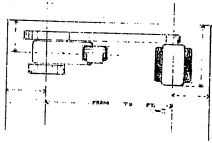
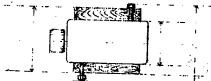
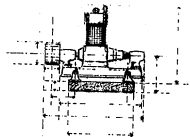
June 17th
Sent Sunday June 9th to following

Page	Browning	Iron	Engineering	Belge	W Siemens	Eng Mechanic
Val	Engine	Lancaster	Fizian			

June 17th
Wesley star ^{sent} April 26th sent to
Helmholtz Patterson Fizian Hippie Treve Iron Belge W Siemens
Engineering Eng Browning Guthrie E Mechanic Proctor Mount

June 17th
sent Washn Daily star of April 9th to Chidley -

June 17th sent J Adams of June 8 to
Page Guthrie Val Proctor W Siemens Eng Rebooke Engineering
Iron E Mechanic Belge Lancaster Hippie Treve Fizian
Nature Helmholtz Browning Chidley Patterson Carnelly
J A supplement June 8
Val W Siemens Seabrooke Guthrie Eng Engineering
Iron E Mechanic Proctor Belge Lancaster Page
Hippie Treve Fizian Nature Helmholtz Browning
Chidley Patterson Carnelly



1 Bottle of white laquer
 Rowelle 163 William Street
 2 1/2 doz laquer brushes.



6
 .052
 125
 101

[ITEM FOUND IN BOOK]

Cable Code for McLaughlin

Baltimore - Have sold Australia entire

Bordeaux - Have sold Australia

Berlin - " " New South Wales

Baldwin " " Victoria

Constitution - Sail for Sydney Monday

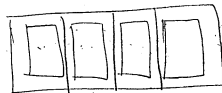
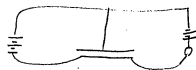
Constitutional " " " Tuesday

Unconstitutional " " " Wednesday

Constitutionality " " " Thursday

Unconstitutionality " " " Friday

Constituent " " " Saturday



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END

90

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Amerasia Hess Corporation
AT&T
Atlantic Electric
Association of Edison Illuminating
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Battelle Memorial Institute Foundation
The Boston Edison Foundation
Cabot Corporation Foundation
Carolina Power and Light Company
Consolidated Edison Company of
New York, Inc.
Consumers Power Company
Corning Glass Works Foundation
Duke Power Company
Exxon Corporation
Florida Power & Light Company
General Electric Foundation
Gould Inc. Foundation
Gulf States Utilities Company
Idaho Power Company
International Brotherhood of Electrical
Workers
Iowa Power and Light Company

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McGraw-Edison Company
Middle South Services, Inc.
Minnesota Power
New Jersey Bell Telephone Company
New York State Electric & Gas
Corporation
North American Philips Corporation
Philadelphia Electric Company
Philips International B.V.
Public Service Electric and Gas
Company
RCA Corporation
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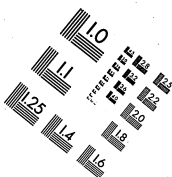
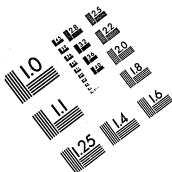
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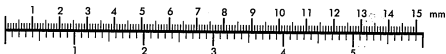


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